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Two industrial designers, Philippe Carreau and Hubert Pelletier, parented the theory, the despecialization of objects. The despecialization of objects addresses the trivializing and undervaluing of objects (poor human-object relationships) caused by post-industrial overabundance and over-consumption. Despecialization is the process to revert an object's function to a more generic state so that it no longer answers an ultra-specific need, but instead satisfies a broader spectrum of needs .

It was revealed that Carreau and Pelletier's approach lacked a definitive generative design process. The thesis redevelops the theoretical framework of the despecialization of objects, tests the process oriented approach through an extensively recorded trial and error design investigation, and produces a final prototype. Due to the narrow focus of the exploration, insufficient data was collected to support that despecialized objects could or could not curb over-consumption, but a noteworthy generative creative process, titled the serendipitous generative approach was developed.

THE DESPECIALIZATION OF OBJECTS: A PROCESS ORIENTED APPROACH TO DESIGNING INTERIOR OBJECTS

by

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CHAPTER I

INTRODUCTION

This thesis is concerned with questions as they relate to design of *things*, specifically interior *things*. Why do beds, shelving, lighting and the sort, get tossed before their time? Where is the designer's role in interior object obsolescence? Why should over-consumption matter to a designer? Does not a designer's income rely on the demand for new things? Well, a designer is a participant in the world as well. They consume things too. That means they have the ability to affect the condition from both ends. Designers not only have the ability–if not the responsibility–to consume less, they also have the power to design what is consumed. So, can a designer affect levels of consumption through the nature of the product they create? The answer to this question is the premise to the "despecialization of objects". This design approach assumes that the designer can impose characteristics on an interior product or an interior product system that affects the consumer in such a way that they would consume fewer products.

In this day of environmental waste, conclusions have been made that designers need to rethink and recreate the process of making interior objects in a human and environmentally friendly way. This thesis will not focus on the material make up of products, but rather the formal nature of objects and their functional versatility. The despecialization of objects, a design approach parented by Philippe Carreau and Hubert Pelletier, possesses the potential to reshape human-object relationships and consequently curb over-consumption. The two industrial designers worked together on a project to investigate the idea of despecialization. That work was on display at the *Montréal Interior Design Show* in 2002 and in the *Salone International del Mobile 2003* in Milan. Carreau and Pelletier's work was inspired by post-industrial

overabundance and over-consumption, problems that affect peoples' personal lives, causing them to trivialize and undervalue objects. Both sought to change the human relationship with objects. The crucial question asked was, could we do more with less material and not feel deprived? They argued that "the despecialization of objects" might answer this question. Carreau and Pelletier's defined despecialization as "the process to revert an object's function to a more generic state so that it no longer answers an ultra-specific need, but instead is capable of satisfying a broader spectrum of needs" (Carreau, 2004, p. 16). The character of despecialization makes it possible to obtain a maximum of services via a minimum of means. The approach involves avoiding predefined uses and conceiving objects "outside of any recognized conventional type or language" (2004, p. 17). The user's relationship with the object changes. Instead of the object imposing a function upon the user, the user can creatively attribute a use to the object.

Design motivated by promoting less consumption and the idea that "less is more" are not new concepts. However, what proves promising here is the way despecialization provides a new approach to designing interior products. Through further investigation, it was revealed that Carreau and Pelletier's approach lacked a definitive generative design process. The method, namely the design process, is equally important as the theory behind the despecialization of objects and deserves further development. This thesis redevelops the theoretical framework of the despecialization of objects, tests the process oriented approach through a well recorded trial and error design investigation, produces a final prototype and ultimately begins to indicate whether or not "the despecialization of objects" addresses the problem of over-consumption. The result was a challenging, thought provoking, and realistic design investigation. Due to the narrow focus of the exploration, insufficient data was collected to support that despecialized objects

could/could not curb over-consumption, but a noteworthy generative creative process, titled the serendipitous generative approach was developed.

CHAPTER II

REVIEW OF LITERATURE

Consumption

The concept of consumption, a very broad, layered and, many times, heated topic, stretches back to the dawn of civilization. Ever since humans have populated the earth, they consumed to thrive. Humans, from the point of conception to their death, consume to exist and in return, nature consumes them. Like flames turning a forest to smoke and ashes, or a spider eating its prey, fundamentally, consumption means to use something to extract nutrients and energy. Whenever consumption takes place, by-products and consequences result. The law of the conservation of energy states: neither created nor destroyed, energy only transfers from one state to another. Therefore, when consumption occurs, an outcome always manifests, whether desirable or undesirable. This fundamental understanding of consumption, always at work, shifted and evolved as civilizations developed over time and has become deeply layered by cultural practices and beliefs, to the extent that modern day countries, especially the United States, carry the label as "culture(s) of consumption" (Slator, 1997).

There is no consensus on the definitions of consumption, nor consumerism. There may never be, according to Aldridge (2003). The variable definitions are due to the very nature of the meanings. Aldridge says that these "essentially contested concepts are not value neutral, which is one reason why they are contested. They are a moral battleground for competing values and ideologies" (2003, p. 7). Despite the dissidence, a working definition of consumption and more importantly, over-consumption, are both necessary to continue with the discussion. In terms of its relationship with production and its consequences, consumption, describes the cultural practice to

select, adopt, use, dispose and recycle goods and services, distinguished from their design, production and marketing. Over-consumption can therefore be defined as consumption with negative side effects; namely environmental abuse, economic clean up costs, human health and poor human relationships caused by individuals and societies consuming more than necessary and in irresponsible ways. Rather than instilling a negative view in the definition of consumption, the negative aspects of consumption, embedded in the term over-consumption might be better described as "abusive consumption", a term not widely accepted.

Over-Consumption

Over-consumption identifies the unbalance of consumption and its effects on the environment, economy and mankind. Each field of study, from economics to sociology, poses similar questions regarding over-consumption: causes, consequences, blame and responsibility for creating change. Disciplinary differences manifest themselves as each field of study established alternate understandings. Despite different understandings of consumption, each discussion represents a response to the undeniable degradation of the environment and the continuing depletion of natural resources. For instance, a large percentage of the earth's forest have disappeared, greenhouse gases continue to build, and landfills proliferate as existing refuse sites reach capacity and local governments ask residents to vote on new locations for additional facilities. However, despite the ongoing effects of consumption, over-consumption cannot be objectively defined. Richard Wilk explains:

> We may say, for example, that we need at least one clean shirt for out trip, but taking ten is a wasteful luxury. But this kind of need is always relative, and is socially and culturally constructed, rather than being driven by the biological force over hunger. (2004, p. 21)

Therefore, over-consumption must remain a relative concept, identified by its side effects and cultural context rather than the quantity consumed.

Modernism and Consumption

The present day phenomenon of consumption developed hand in hand with the mass-production of the industrial revolution and the urbanization of the mid to late nineteenth century (Sennett, 1974, Slator, 2003, Raizman, 2004, Sparke, 2004). The sociologist Don Slater states: "Consumer culture is not a late consequence of industrial modernization and cultural modernity, something that followed after the intellectual and industrial labors of modernity were accomplished. It was rather part of the very making of the modern world" (1997, p. 9). As modernity impacted the lives of increasing numbers of people, design took on a role that had previously only been for the social elite. For centuries, hand-made objects, such as furnishings, ceramics, glass, metalwork, dress, and even carriages acted as providers of comfort, markers of propriety, and the glue of social, family and gender relations. (Sparke, 2004) From the eighteenth century onwards, in both Europe and the U.S., industrialization increased the volume of goods and the access to goods, which started to blur traditional class distinctions, giving new classes access to comfort. (Sparke, 2004). Penny Sparke explains that:

> New classes emerged as increasing numbers of consumers embraced goods which played more than a mere utilitarian role in their lives. Within this context of enhanced social mobility the link between the decorative arts and taste was reinforced and became a key social indicator. As in later years industrially produced goods gradually became accessible to more and more levels of society, designed goods and images took over from the decorative arts the task of demarcating social difference, becoming a means through which large numbers of consumers could express their social aspirations and achievements. They also, significantly, took on the task of messengers of fashionability and modernity. (pp. 13-14)

Slator (1997) suggests that the industrial and urban pattern of modernization became well established during the prosperous mid-Victorian years from the 1850s to the 1870s. Modernization matured during the period between 1880-1930, especially the emerging modern norm for how individuals produced, sold and assimilated consumer goods into everyday life. By

the first quarter of the twentieth century, Slator indicates, "goods are designed with standardized, replaceable components which allow them to be produced in very large volumes at low unit cost through an intensive, rationally controlled and increasingly automated technical division of labor" (p. 13).

The economic momentum of mass-production and consequently, urbanization, brought forth a new stimulus to consumption (Sennett, 1974). According to Sennett:

> People of even modest means were buying items they had never thought of owning before. The level of consumption throughout the middle and upper working classes expanded. One instance: with the coming of the department store, the idea of owning several sets of clothes, all quite similar and machine-made, for street wear took hold. Another: in these stores people began buying pots and pans which served specialized purposes, the all-purpose stewpot and skillet now seeming inadequate. (p. 143)

This new stimulus was composed of five factors: (a) high volume, (b) quickly produced machine-made objects, (c) dense city population, (d) fixed pricing and (e) the mystification of retail objects (1974). The combination of large volumes of merchandise available to merchants and the increased mass of buyers within cities led to the new practice of fixed pricing, something formerly uncommon. Instead of prices being set high, while buyers haggled to lower prices, department stores lowered the prices of medium grade goods to low grade good prices with the intention of profiting from high volume sales, rather than high markups (1974). This allowed lower income classes to purchase goods they were unable to previously.

The techniques used by retailers to sell large volumes of the somewhat "ordinary" goods led the to the mystification of retail objects and thus to the present day culture of consumption. Sennet describes the problem created by the large volume of mediocre goods:

> The retailers of the time, Boucicault and Palmer most explicitly, knew they had a problem in stimulating people to buy such nondescript goods. They tried to solve this problem by creating a kind of spectacle out of the store, a spectacle which would endow

> the goods, by association, with an interest the merchandise might intrinsically lack. (p. 144)

The retailers addressed the problem by incorporating unexpected juxtaposition. For example, instead of putting many pots of the same sized and manufacturer together, retailers would display only one pot next to a pot of a different shape (1974). D'Avenel makes the point that: "It seems… that the most dissimilar objects lend each other mutual support when they are placed next to one another" (Sennet, p. 144). Sennet goes on to explain that this "act of disorientation" temporally suspended the "use character" of the object, stimulating people to buy something they did not plan on buying. Sennet states "the stimulation to buy resulted from the temporary well of strangeness, of mystification that the objects acquired" (p. 144). Department stores were successfully able to stimulate buyers to import personal meaning into objects beyond their utilitarian value, a practice that continues on to the present. According to Sennet, industrialization brought about the individual personality as a social category and very well could have led to the wide spread social practice of purchasing things to reflect and define one's identity, cultural consumption (1974). This new practice differed from the past where only the most wealthy had the means to willfully define ones identity through obtaining objects.

Criticism of Consumption: A Brief Survey

Misdirected consumption is an age-old concern. "Why spend money on what is not bread, and your labor on what does not satisfy" (Isaiah 55:2, NIV). Redefining lifestyles to sync with nature were proposed as far back as the thirteenth century. The German theologian Meister Eckhart "conceptualized earth as a fragile resource affected by human endeavor" (Chapman, 2005, p. 5). Strong criticisms of consumption can be dated back to Karl Marx (born in 1818), who argued that the capitalist economy causes the fetishization of goods and services, the devaluing of the worth of a good or service, and instead focusing on its price in the market.

According to Marx (translated by H. Achterhuis), "things become endowed with spiritual qualities that we don't understand and they are ruling us instead of serving our needs" (Chapman 2005, p. 59). In his most famous work *The Theory of the Leisure Class* (1899), Thorstein Veblen (born in 1857), a Norwegian-American economist and sociologist, wrote a satiric analysis of consumption and American society. He observed the ways in which the emerging leisure class of the late nineteenth century, consumed expensive goods and commodities to display social status and wealth and termed this socially motivated form of consumption "conspicuous consumption" (Lodziak, 2002). Veblen's view of consumption marks a breakaway from economic approaches to a more cultural approach of understanding consumption found in the newly emerging disciplines of anthropology, sociology, and psychology. Veblen's "conspicuous consumption" proved to be a reliable picture of American society. Presently the upper classes, but also the lower and middle class Americans, participate in the process (Veblen, 1899/1992). Jean Baudrillard describes this cultural shift in conspicuous consumption: "In a world of relative affluence, the shoddiness of objects replaces the scarcity of objects as the expression of poverty" (1968, p. 146). As emerging disciplines, anthropology, sociology, and psychology, gained increasing momentum, the understanding of consumption and the idea of consumerism continued to develop. The French sociologist Pierre Bourdieu (1930-2002) charted, more than anyone else, the relationships between class cultures, consumption and identities (Lodziak, 2002). He helped "elevate the significance of the culture of commodities to a central place" (Lodziak, 2002, p. 50) in the understanding of personal identity, influencing present theories of cultural consumption. As the United States continued increasing economic reliance on and cultural integration of consumerism, cultural studies continued to shift to a positive, ideological view of consumption. Presently, criticisms emerge from other fields, such as political economics and environmental

studies, rather than sociology (Lodziak, 2002). These criticisms mostly claim environmental degradation as the result of consumption.

Cultural Consumption

Several fields of study seek to understand the nature of consumption and suggest different influences and causes of over-consumption, but sociology and anthropology have shed the most light on the status and meaning of consumption in modern society (Princen, 2002). Economic studies look at consumer behavior using mathematical models while political studies investigate the ways in which policy affects consumer behavior, corporate practices and the "struggles over the division of spoils and burdens in a growing economy" (Princen, 2002, p. 11). Economic and political studies diagnose over-population, technological advances and supply as direct factors affecting consumption. Their connection with consumption may be true, but they do not explain over-consumption. A survey of major commodities reveals that increases in resource use can only in part be due to increases in population. From 1965 to 1995, the world population increased by 70 percent, while the increase in printing and writing paper increased by over 300 percent (Princen, 2002). Examination of technological advances shows that technology has added to the problem. In the case of fuel consumption of private vehicles, fuel efficiency has increased by 35 percent in the past thirty years, yet the fuel consumed in America has slightly risen, not dropped as one would presume (Princen, 2002). American drivers travel more, suggesting that technology change has spurred even more consuming behavior, rather than cut down on fuel consumption, drivers just travel more miles on the same gallon of gas. Psychology is concerned with the nature of satisfaction and linking it to work, income and consumption. (Princen, 2002, 11) Sociology and anthropology share two main views of consumption, "consumer culture" (Lodzaik, 2002) and the "consumption trap" (Princen, 2002). Theories of "consumer culture" propose that people do not seek to consume things, but rather images. The

focus is on the meaningful nature of consumption, emphasizing consumption's significance for forming, maintaining, and expressing self-identity and life style (Lodzaik, 2002, Princen, 2002). "Consumption trap" refers the idea that structural forces, governments and corporations outside the control of the consumer or community, manufacture consumption.

External Verses Internal Influences of Over-Consumption

Categorizing the forces that drive consumption reveals where solutions might lay to solving over-consumption. Causes of over-consumption can be categorized either as external (structural) or internal (individual). External drivers include population, technological advances, government policies and corporate advertising campaigns. Internal forces include both personal ethos and human nature. Note that culture, depending on how its definition, can be external or internal. So, which force has the biggest influence on people over-consuming? Though population and technological advances influence consumption, the main cause of over-consumption lies at the individual level. In fact, whether external or internal, the individual level is the source of the problem. Individuals work together with other individuals to make government polices, run corporations and develop technologies. Each individual make choices based on their priorities, which include prioritizing the priorities of others. Decisions made have consequences, some larger than others. Thus, every person in modern society, in any and every position, is the cause and the victim. There are no bystanders.

Human-Object Relationships

Humans have always had a relationship with the objects they possess; a physical, psychological, emotional and spiritual connection with objects. "Objects of consumption are always culturally meaningful and have been used at all times to reproduce social identities culturally" (Slator, 1997, p. 5). The fundamental premise of material culture is that objects have

meaning, even utilitarian objects (Hebdige, 1979, Prown, 2002). We physically interact with all objects, whether statically or dynamically. When someone sits in a chair, they change their body position to conform to the chair, and in return the chair supports the weight of the body. As soon as the person can manipulate the chair to best fit their physical needs, the physical relationship becomes dynamic. This could be as simple as turning the chair around, or even standing on it to reach something up high. The physical aspect of the relationship is purely utilitarian, but the physical relationship can quickly develop into a psychological and emotional dependence. This immediate installation of meaning, is what Roland Barthes is speaking about when he says, "as soon as there is a society, every usage is converted into a sign of itself" (Eco, 1997, p. 183). Barthes is referring to a larger scale than the chair mentioned above, but the concept still applies. In the case of the chair, meaning exists on an individual level and a larger society level. A person looks forward to sitting in the chair after a long day of work. The chair can remind them of positive memories that had taken place while sitting in the chair or display their affluent taste when guests come over. It is interesting that in modern American culture, people find themselves having psychological and emotional attachments with an object before they ever interact with or own one. It seems that in American society, there are more dynamic relationships with objects with what people want to own rather than the ones they already possess. Once purchased, the object never lives up to the initial romantic relationship (expectations).

Peter Corrigan (1997) divided the value of objects into three value systems: exchange value, use value and signifying value. Exchange value denotes the market value of an object; use value indicates the functional worth, while signifying value is "use-value when an object is seen to have 'uses' way beyond the obvious ones connected to its concrete form" (p. 34). Signifying value is similar to Umberto Eco's view of denotation and connotation of architectural objects. He stated that objects denote their primary function, comparable to Corrigan's use-value, and that

objects also connote their secondary function, a certain ideology of their function, their meaning. The obvious use-value of a side chair, for example, allows for extra guest seating, but its signifying value may be tied to the fact that is was a gift from a family member. The signifying value of a self-purchased original Charles and Ray Eames chair may have little to do with family or with extra seating for guests, but more to do with associating one's self with affluent taste. Eco suggests, "with respect to life in society the 'symbolic' capacities of these objects are no less 'useful' than their functional 'capacities'" (1997, p.187). Corrigan's object values, though clearly defined, are inseparable and the combination of the three value systems make up the meaning of the object.

Designer Approach

Up to this point, the discussion has focused on the theories of consumption and human-object relationships. It has been demonstrated that the cultural phenomenon of consumption comprises many facets and layers informing no inclusive way to solve abusive consumption. The most optimum way to curb over-consumption maybe approaching it from different angles simultaneously, with each field of study contributing to the discussion and influencing the process through which makers and users address over-consumption. Unfortunately, many academic fields of study seek to understand the nature of consumption, but few have found answers to the problem of over-consumption. The "designer", who has within their grasp, the skill and passion to affect change one product at a time, has the significant opportunity and training to combine new technologies in manufacturing and materials with knowledge of human behavior into a physical manifestation. Many designers have done so throughout time. As consumption characterizes the modern world, two key design movements of the last 150 years lead positive responses to resolving over-consumption, through the self-conscious designers of the Arts and Craft movement and through the machine-inspired aesthetics of Bauhaus trained professionals.

Arts and Crafts Movement

The Arts and Crafts movement, established as a reaction to the effects of nineteenth century industrialization and the Victorian aesthetic, reshaped modern sensibilities about design and underscored the importance of well-crafted objects, spaces, and buildings (Bhaskaran, 2005). In addition, practitioners of Arts and Craft movement–John Ruskin and William Morris–sought to reform society through good design and, in so doing, suggested shifts in human-object relationships and in subtle ways, indicated a deepening consciousness of the designer in realizing that the products he designed impacted the quality of life for both maker and user. In the early stages of industrialization, there was ample concern about the negative human consequences; sanitation, disease, alcoholism, low wages, poverty, dangerous working conditions, long hours and child labor (Raizman, 2004). Before the 1850's, a portion of the emerging class of industrialists, merchants, and professionals took an interest in the living and working conditions of factory laborers. These early reformers seldom achieved the intended change, but "nonetheless, their attitudes and projects had the effect of further investing the decorative arts with social and moral meanings that are a significant part of the dialogue that informs the history of modern design" (Raizman, 2004, p. 45). Beginning in the 1850's, following the early reformers' efforts, John Ruskin and William Morris helped "placed the issues of design and production within a new ethical framework based upon an almost religious attitude linking craft, art, and social reform" (Raizman, 2004, p. 66). Ruskin, a writer and theorist, deplored the machine. For Ruskin, industrial progress represented empty materialism:

> The foundations of society were never yet shaken as they are at this day. It is not that men are ill-fed, but that they have no pleasure in the work by which they make their bread, and therefore look to wealth as the only means of pleasure. (p. 108)

Unlike Ruskin, William Morris, well known for the Morris Adjustable Chair and many other Arts and Craft products, sought to integrate theory and practice with an interest in the complete interior environment, from windows, to furniture, to patterns, to products (Raizman, 2004). Setting the aesthetic tone for the Arts and Craft movement, and advocating connections between architecture, painting, and sculpture to the decorative arts, Morris wrote:

> It is only in latter times, and under the most intricate conditions of life, that they have fallen apart from one another; I hold that, when they are so parted, it is ill for the Arts altogether; the lesser ones become trivial, mechanical, unintelligent, incapable of resisting the changes pressed upon them by fashion or dishonest; while the greater, however they may be practiced for a while by men of great minds and wonder-working hands, unhelped by the lesser, unhelped by each other are sure to lose their dignity as popular arts, and become nothing but dull adjuncts to unmeaning pomp, or ingenious toys for a few rich and idle men… (p. 108)

Beyond a unification of decorative arts with architecture, painting and sculpture, the Arts and Crafts ideal rejected the dehumanizing aspects of mechanization and valued simplicity and handmade appeal. The movement "regarded machine production as degrading to both creator and consumer" (Bhaskaran, 2005, p. 24). The movement rejected not only mechanized industrialization, but also the mass-produced tacky reproductions of past styles of the cluttered, over-the-top Victorian aesthetic. Typical designs, characterized by simplicity of form, the use of plain, linear shapes, exposed construction, and restrained ornament, demonstrated concerns with being true to the materials and letting the simple form and exposed joints dictate the motifs. "The movement was steeped in the belief that good art and design could reform society and improve the quality of life of creator and consumer alike, hence it was an important precursor to modernism" (Bhaskaran, 2005, p. 25).

Reflecting on the Arts and Crafts movement, it is clear that the clean lines and the respect for materiality directly influenced later design aesthetics, but more importantly, the movement brought forth the self-conscious designer, one who realized that their ideals and products affected

society and the individual. Comparing the movement to present views of mass consumption, the proponents of Arts and Crafts focused on the quality of life of the industrial worker, the rejection of chaotically cluttered interiors and the spiritualization of craft, while unintentionally overlooking the environment (since the environmental effects of industrialization had not yet been realized). The profound notion that these Arts and Craft designers, over a hundred years ago, saw aesthetic qualities of interior environments and products that had both favorable and adverse effects on peoples lives, echoed later in the twentieth century, but in the work of designers who had radically different ideas about the presence of the machine in both the design process and consumer products.

Bauhaus and Beyond

"The Bauhaus lasted just 14 years, and took in only 1,250 students during that time, but despite its short history, the progressive and experimental curriculum and innovative teaching practices that it developed had an enormous impact on design – one that continues to this day" (Bhaskaran, 2005, p. 118). Unlike the Arts and Crafts movement, the founding fathers of Bauhaus embraced industrial technologies and the marriage of art and design. After World War I, the Bauhaus school formed with several goals:

1. Design for the common man: "Produce products that were both affordable and practical to working class consumers" (Bhaskaran, 2005, p. 117).
2. Form follows function: "Form should be governed by function and cost" (Bhaskaran, 2005, p. 117). The idea that "form follows function" was coined at this time, (even though it could have been applied earlier during the Arts and Crafts Movement). "Form follows function" led to the angular, fundamental geometric aesthetic.

3. Industrial Functionalism: Train students to design mass-produced furniture for the industrial world. Industrial Functionalism led to the embracement of industrial materials and colors, steel, concrete and black leather.
4. Amalgamation of fine arts and craft skills.

Even though the Bauhaus embraced industrialization, similar to Victorian manufacturers, the leaders of Bauhaus believed in the potential of affecting social change through efficiently designed products for the mass market, rather than profiting from cheap reproductions of past handcrafted furniture. To Bauhaus, the standardization and uniformity of mechanized mass production possessed the potential to affect social change by "erasing distinctions of class and embracing a shared modern aesthetic in which decoration and clutter had become outmoded, wasteful and selfish" (Raizman, 2005). The furniture may have possessed an industrial aesthetic, but unfortunately, few products were suitable for mass-production (Bhaskaran, 2005). David Raizman describes the reason for this irony well:

> In eschewing traditional decoration and upholstery and embracing industrial materials, such prototypes were intended to evoke sympathy with efficiency and hygiene as modern values. Yet while the experimental use new materials in furniture was bold and inventive, these models for industrially produced furniture with an aesthetic linking plain surfaces and the absence of decoration to a less materialistic and more efficient lifestyle proved marginal, failing to interest manufactures or connect with consumers beyond private commissions for wealthy clients… What is remarkable is that the design of such prosaic objects held interest for this and other groups of designers in the interwar period, who saw them as the basis for a more unified approach to a specifically industrial design. (2004, p. 165)

During its time, Bauhaus was unable to have the global impact that it aspired, but the Bauhaus ideal and aesthetic did succeed in shaping twentieth and twenty-first century design. After World War II, mid-century modern designers recalled the ideal to provide "design for all" through the power of mass-production. Mid-century modern designers rejected the cold steel appeal of Bauhaus furniture and embraced warm colors, warm materials, such as laminated

woods, and a the new technology of plastics. Plastics and laminated plywood allowed designers to create more organic (curvilinear) forms. Besides the change in material and form, the ideal remained the same, take advantage of mass-production and industrial technology to enable the common man ownership of beautifully designed, functional furniture. Again, the working class could not afford much of the furniture because of high manufacturing costs. In recent years, as materials and manufacturing have become cheaper, especially plastics, interior objects have finally become affordable. Unfortunately, the ideal to design for the benefit of man has been overcome by economic gain. Presently, as environmental damage is uncovered, urgency for human and environmental health slowly grows in the design community. Green design, using bio-friendly materials and manufacturing techniques that do not harm humans or the environment, is still in its adolescence (McDonough, 2002). Green design tackles the physiological impact on humans, but has not yet affected change on human-object relationships. As put forward earlier, the solution lies where the problem lies, at the individual level. To affect change on this level, designers must address the human-object relationship.

The Despecialization of Objects

Carreau and Pelletier's Despecialization of Objects

Along with the aforementioned environmental effects, Philippe Carreau and Hubert Pelletier attribute poor human-object relationships as a significant problem of over-consumption: "the insidiousness of this high level consumption affects our personal lives more intimately–albeit subtly–making us trivialize and undervalue objects" (Carreau, 2004). They go on to say that designers exacerbated the problem:

> Faced with supersaturation, designers often inappropriately try to perfect things through specialization, by giving objects greater distinctive, expressive, and aesthetic qualities. As a result, paradoxically this exacerbates the banalizing and anesthetizing process. We

> believe that we must search for ways in which design might reframe the terms of our relationship with objects. (2004, p.16)

Within the context of the domestic interior environment, they explain that the problem is caused by the presence of too many objects and that too many of them are specialized. In interior environments, various needs generally translate into a need for numerous objects; each created to accommodate a specific function. Jean Baudrillard's view supports their claim:

> The current trend, moreover, is by no means to rectify this inconsistency but, rather, to meet successive needs by introducing new objects. The result is that each object added to the sum of objects may be adequate to its own function but work against the whole; it even happens that a new object will be adequate to its functions while at the same time working against it. (1968, p. 8)

Carreau and Pelletier suggest that this "hyper-specialization" often causes an unnecessary fragmentation of functions and that people must find ways to simplify, decreasing the number of used and discarded objects, generating new socially and ecologically responsible ways of living. In order to simplify, people must live with less without having to lose the functions provided served by numerous specialized objects (Carreau, 2004). They argue that "the despecialization of objects" would enable people to live with less while not compromising functionality. To sum up, Carreau and Pelletier propose to rethink the design of interior objects to change human-object relationships to curb over-consumption and, in return, affect positive change to the environment.

The assertion that "the despecialization of objects" answers the question of "living with less" relies on two beliefs or principles about interior objects (though not explicitly identified by Carreau and Pelletier as principles); interior objects are integral participants of an interior system and that each object within the system participates efficiently and versatilely when it is despecialized. More or less bound in a functional group, an intervention of a single object could impact the entire group (Carreau, 2004). To streamline the system, Carreau and Pelletier propose

to take advantage of the disposition of interior objects as active parts of a larger interior system by "acting upon its composite parts", introducing into the system, despecialized objects, ones that function versatilely, performing more functions and thus, ultimately reducing the overall number of objects used at any one time or over a long period of time. So, if to specialize an object means to create an object to perform a specific function to the extent that it does one task well while incapable of handling other tasks, then to despecialize an object is "to revert an object's function to a more generic state, so that it no longer answers an ultra-specific need, but instead is capable of satisfying a broader spectrum of needs" (Carreau, 2004). Carreau and Pelletier use an example of a kitchen knife to explain the concept:

> A simple kitchen knife has a very basic function: to cut. However, it can also carry out a great number of tasks normally accomplished by other specialized objects in the kitchen: we can crush with the flat side of the blade, pierce with the tip, chop in various ways, etc. Hence, the more an object is specialized, the less versatile it is. (2004, p 16)

But, if a despecialized object does not address particular functions, will it not perform less effectively? In the case of some objects, such as auto mechanic tools, this may be true because the task or function they fulfill requires complicated and specific means to accomplish. On the other hand, interior objects fulfill very basic functions requiring simple means. For example, the function to provide seating simply requires a supportive surface for someone to rest. The floor accomplishes this function, let alone an object such as a box or a chair. Also, other objects, besides interior ones, that address more complicated tasks such as electronics, vehicles and even hand tools may benefit from a less explicit and more "generic" approach to functionality.

Despecialization makes it possible to obtain a maximum of services via a minimum of means by simplifying, avoiding predefined uses and conceiving objects "outside of any recognized conventional type or language" (Carreau, 2004). In other words, to avoid predefined uses, the object must not resemble any known furniture archetype. When the object is unfamiliar,

the user's relationship with the object changes. Instead of the object imposing a function upon the user, the user can creatively attribute a use to the object by choosing its orientation and function.

When considering the despecialization of objects as a viable approach, the question arises: In light of many present product design movements and trends, is the despecialization of objects a novel approach? Indicated by Carreau and Pelletier, the multifuctionality paradigm, practiced in product design, parallels with the despecialization of objects. The goal of multifunctionality is similar to despecialization; increase the functionality and versatility of a product by combining into a single object, several different composite parts, each with its own specific function. In contrast to the kitchen knife, the Swiss Army Knife is a good example of multifunctionality; its grouping of parts and functions endows it with its versatility (Carreau, 2004). If multifunctionality was defined more generically, as an ability to perform multiple functions, then despecialization could be considered a branch of multifunctionality, but doing so ignores the different characteristics of both approaches. Defined specifically, the two approaches run parallel, rather than in series.

A second common method to increase versatility of objects, modular design, describes a process of "first creating units that perform discrete functions, then connecting the units together to provide a variety of functions" (Chandra, 2004, p. 126). This process involves "decomposing the overall design problem into functionally independent sub-problems" so that the design of each component supports one or more sub-functions. When components are combined together to form one product, they will support a larger function (p. 126). Similar to despecialization and unlike multifunctionality, modular design allows the user to modify the component combination to custom suit their functional needs, but unlike despecialization, modular design seeks product versatility through an increased number of parts.

In a third comparison, both the despecialization of objects and the late twentieth century trend of minimalism share the goal of overall reduction. The despecialization of objects focuses on overall reduction within a space by introducing simplified, yet versatile, objects. Exemplified by the use of transparent materials, minimalism, as a trend found in product design, centers on the reduction of material and expressive media, the value of empty space, extreme simplicity, and formal clean lines (Bhaskaran, 2005). The main difference between the two is rethinking functional relationships between interior objects and humans drives despecialization, where minimalism is aesthetically focused, driven by a Zen-like mentality, less is more. Because the approach seeks to make products disappear into the background, minimalism, in practice, means minimizing human-object relationships. Compared to three other approaches to product design, the despecialization of objects shares similarities, but remains an independent approach.

In order to increase the functional performance of objects, employing the principle that objects are part of a whole, Carreau and Pelletier proposed to "create 'clusters of despecialized objects', materializing them in a single body, that will promote the elimination of a greater number of objects in a system" (Carreau, 2004). They argue that to form "clusters of despecialized objects" the normal order of interiors must be taken into account:

> In a domestic environment, objects are organized into functional groups for activities such as sleeping, eating and relaxing. This organization more or less dictates the architectural framework and spatial setup. Therefore, to ensure the (continuing) effective functioning of a system, redefining the living space through a despecialization of its constituting parts must be done in a way that respects the existing organization of groups and sub-groups. (p. 17)

In their design investigation, they focused on the living room as a functional group. Upon analyzing this group of objects, they split it into two sub-groups: "tool-objects" which fulfill mostly utilitarian functions and more personal, bodily "comfort-objects" (p. 17). According to their analysis, a desk would be considered a "tool-object" and a sofa would be categorized as a

"comfort-object". However, unlike the furniture just mentioned, the intent is to remove the familiarity of such objects so the user can instill their own use.

> We generally use objects according to the functions for which they have been created. The understanding of this use is assured by a code, a semiotic language based on object typology. This code didactically prescribes specific uses. Since we wanted to avoid this predefinition of use, we had to conceive objects outside of any recognized conventional type or language. This neutrality favors a definition of the object by the user rather than the opposite; instead of the object imposing its function on the user, the user has the possibility of appropriating it by creatively attributing a usage. (p. 17)

Following this avenue of thought, Carreau and Pelletier developed a series of despecialized tool-objects and comfort-objects. The development process began by isolating the primary functions of a living room, such as sitting, containing, and arranging; and then breaking existing objects that serve these functions down into their elementary forms; planes, containers, and cylinders (see figure 1).

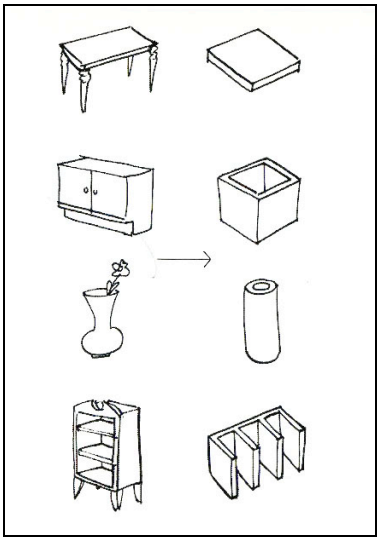

Figure 1: Existing furniture broken down to fundamental forms (Carreau, 2004, p.17)

Using these elementary forms as a basic vocabulary, they reassembled them into new clusters, within one object, attempting to avoid predetermined specific functions while favoring a variety

of possible uses. As a result of the exploratory design process, they created three tool-objects and two comfort-objects (displayed in Figure 2). The three tool-objects consisted of varied combinations of simple geometric shapes and enclosures. They describe their work as follows:

> Our objects are not a collection of functions (like the Swiss Army Knife), but are truly autonomous objects embodied in a single monolithic volume. Since they all came from the same shaping process, we can find in the Tools a cohesion supported by the consistency of details like wall thickness, chamfers at the end of cylinders, filler radii, etc. However, even if the formal approach creates a strong visual cohesion amongst the objects, each has its own dominant geometric structure, its own specific 'personality'. (p. 17)

The two comfort objects are almost one in the same. They designed the "Litho chair" and its counterpart, a floor cushion that is the soft version of the chair. Describing the Litho chair they write:

> The Litho chair is also despecialized. Its geometry suggests a number of possible seating positions, not hierarchized by signs. This blurring of codes generates the interpretative ambiguity necessary to let users freely determine its use. Moreover, to encourage using the floor as a seat (a naturally non-specialized element of the home), the Litho chair is conceived as a physical continuity of it. (p. 17)

Figure 2: Carreau and Pelletier's despecialized objects (Carreau, 2004, p.16)

For the purpose of clarification, the despecialization of objects has been compartmentalized into a list of attributes:

5. Premises:

   Abusive consumption has led to poor human-object relationships.

   Objects have meaning to people.

   Problem exists at the individual level; they are the cause and the victim.

   The designer possesses the ability to affect change through the design of objects.

6. Mission:

   Reframe the terms of human-object relationships resulting in the desire for fewer things and a longer meaningful and useful life span of interior objects.

7. Definition:

   Despecialization is the process to revert an object's function to a more generic state, so that it no longer answers an ultra-specific need, but instead is capable of satisfying a broader spectrum of needs.

8. Principles:

   Interior objects are integral participants of an interior system and thus an intervention of a single object impacts the entire group.

   Each interior object within the system is a versatile participant when it is despecialized.

9. Goals:

   Promote the elimination of a greater number of objects in a system without losing the functions served by many specialized objects.

   Satisfy a broader spectrum of functional needs with one despecialized object.

   Increase the meaningful and useful lifespan of interior objects.

   Increase the reusability of objects amongst different users.

   Enable the user to attribute function to an object.

   Encourage the efficient use of materials.

10. Application/Methodology:

    Transform primary functions of interior system into their elementary forms.

    Create a vocabulary of shapes and forms from analysis.

    Combine formal vocabulary elements into new clusters; despecialized clusters.

    Divide interior system into two sub-groups: tool-objects and comfort objects.

    Avoid traditional archetypes and predefinition of use.

Allow for rotation of object in space to encourage the user to determine the object's orientation and function.

Reworking the Despecialization of Objects

Carreau and Pelletier's construct for the despecialization of objects overlooks the impact of the creative generative process on the final outcome; whether despecialization truly occurs in the final object. Also, their theory lacks the acknowledgement that some familiarity is necessary for object usability and that interior objects possess the capability to define and modify space beyond the capacity of architectural structures.

The look and configuration of an object is directly and indirectly influenced by the "hand" and experiences of the designer. This is evident in the beginning of the design process. The design process consists of a series of developmental phases: Analyze, Conceptualize, Test, and Implement. During the design process, these phases occur sometimes linearly and sometimes not, but they are always in constant flux as the designer strives to achieve a final solution (object). The analyze phase entails the investigative process of understanding and analyzing the design problem while developing specific design criteria. The conceptual phase represents the generative creative process to develop formal solutions guided by criteria conceived in the analyze phase. The criteria usually consist of physical, psychological and task oriented needs, as well as desired secondary functions (such as choosing certain aesthetics that communicates that the user is "hip"). These functions usually entail specific restraints. With these functions in mind the designer seeks to develop forms that fulfill these functions, while considering aesthetic appeal. This common approach has been dubbed "form follows function", and is accepted to be appropriate by most design disciplines. As the name suggests, the specific function(s) of an object are inherent in the objects form and as Umberto Eco states, thus denoted by the form (1997).

It is not uncommon for designers to challenge the idea of "form follows function" by beginning the design process with a focus on formal exploration. This is very common in interior object design. Most interior objects fulfill simple functions that require simple means to achieve. A chair, for example, offers rest and bodily support by the means of a structural surface allowing someone to transfer weight from their feet to their center of gravity, their hips. This can be achieved by as simple of an object as a cube or a tree stump. The same simplicity is seen in a vase. A vase holds vertical objects, like flowers, by the means of an enclosure with an opening on the top. This simple function can be achieved by varied means of simple to complex sculptural forms. Because interior objects fulfill simple functions through simple means (encouraged by the development of plastics and manufacturing technologies in the past century), designers are capable of a wide range of formal and material exploration without compromising the intended functions. The book of 1000 chairs illustrates this, just by the raw number of varying chair designs (Fiell, 1997). In this case, the designer prioritizes form over function during the design process, but by the very intention of the designer to make a chair, a familiar type of furniture, the chair will still maintain a specialized function, sitting. In order for an object to be purely despecialized, as Carreau and Pelletier suggest, the object must be removed of any familiar interior object type.

To distant oneself from familiar interior object archetypes and their functions is a challenging proposal. As mentioned earlier, the initial intentions (criteria and expectations) of the design process and the "hand" of the designer both affect the outcome of an object's form and configuration. To remove the influence of the designer's "hand" may be impossible, but one can manipulate the creative generative process and thus manipulate its final outcome. In this case, the desirable final outcome is a despecialized object. When categorizing generative creative process, based upon the designer's intent (state of mind), three basic generative approaches are

distinguishable: functional, formal, and serendipitous. Functional represents the initial intention to fulfill specific functions (form follows function). Formal represents the initial intent to achieve a specific formal expression or emotional effect through form (function follows form), while maintaining a functional end to some degree (such as a sculptural chair). Serendipitous has no specific functional or formal intent. The serendipitous approach relies on the freedom of the designer to explore materials and forms with no initial desire for function, expression or effect. Only later in the design process will the ideas, resulting from the generative process, be considered for their functional and formal (expressive) potential. The serendipitous approach to the initial creative generative process allows for a more effective approach to promoting the avoidance of recognizable furniture archetypes and encouraging a more pure despecialized object.

One could suggest that despecialization basically means to remove function from the original intent. However, this is deceiving because the reason for despecializing an object is to embrace functional possibilities, freeing an object from the limitations of a specific task, chosen by the designer. If function is removed from the idea of despecialization, it becomes a sole artistic endeavor. This is not the case though. Despecialization seeks to make objects more useful to people by disassociating a specific function from an object allowing the user to define the use as they see fit. Despecialization, in order to make an interior object more useful than a typical specialized object, involves suspending the intent of incorporating function criteria till later in the generative design process.

The complete avoidance of recognizable objects, a fundamental principle in despecialization, conflicts with Umberto Eco's findings that objects should not be void of familiarity. He states: "The form of the object must, besides making the function possible, denote that function clearly enough to make it practicable as well as desirable, clearly enough to dispose one to the actions through which it would be fulfilled" (1997, p. 186). Umberto Eco premises this

statement on the theory that all objects are communication devices. Influenced by cultural training, an object's form denotes their function and connotes their social meaning, even when they are not being used. Comparing a set of stairs with an elevator, as Eco did, will help explain. Even though both a set of stairs and an elevator perform the same primary function, to enable one to travel from one level to another, stairs in regards to denotation, more effectively denote their primary function than the elevator. Stairs, being an older technology, require the physical faculties of a person to go from one level to another. Due to the dimensional limitations of the human body, someone can only raise their leg only so far, thus the stairs are set at reasonable increment. The act of using stairs is close to the act of walking up a hill. The act is so familiar it that it requires very little conscious thought. This means that when someone sees the vertically incremented horizontal planes, they quickly recognize they are walkable. They can clearly see that the stairs lead somewhere, even if the destination is not seen and they can understand how the stairs relate spatially to the rest of the space. This incremented pattern denotes travel from one level to another.

The elevator, on the other hand, does not physically reflect how it spatially relates to the traveler's destination and how that destination is connected to the place of origin. When approaching an elevator, one would see a door with no handle and a button or two. The elevator requires a process of pressing the button, waiting for elevator to arrive, entering, pressing the desired floor and then waiting till one arrives at their destination. Knowing what the elevator does, its function, and how to operate it requires cultural training. Changing the interface would expose influence of cultural training. With a new technology, one could speak, asking for a particular floor. If someone unfamiliar to this operation, approached the elevator, they would be unable operate it. Simply said, if they had never been culturally trained, one would not know

how to use the elevator but would still know how to use the stairs based on the denotation of the stairs' form.

The objective of despecialization to design furniture without familiar furniture archetypes to the extreme that the object would have no intended orientation, results in a generic form, unfamiliar to a user. At the end of Umberto Eco's argument, he suggests that designers create objects with denotation in mind so that a culturally untrained person may know how to use the object (1997). Despecialization has the potential to remove all familiar clues to its function and thus render the object without denotation and consequently without use. Therefore, the despecialization of objects must seek creating a well-balanced object that has versatility, instilled by a generic form, while still offering clues to its possible functions, familiar but not familiar.

Based upon an object's primary function, Carreau and Pelletier propose a classification of interior objects into two types: tool-objects and comfort-objects. As stated earlier, tool-objects address task-oriented functions while comfort-objects address leisure functions, namely human bodily comfort. Carreau and Pelletier do not recognize the ability and missed the opportunity for interior objects to function as space definers. A sheet of fabric hanging from the ceiling may provide a task-oriented function, such as filtering light and sound, or provide a comfort-oriented function, like privacy. In addition, it also may provide a way to divide space beyond the capabilities of the architectural structure. When functioning to divide space, the fabric acts as a spacer between spaces, exhibiting a third type of interior object, a spacer-object. A spacer-object performs a more fundamental function than the other two types by directly defining the interior space and thus defining the human experience of that space. A spacer may occur above, occur below on the floor, and can reshape an interior space without necessarily having to divide it.

Though the object types each have definitive functional characteristics, no interior object perfectly fits within one classification. In fact, an object could participate in all three types.

Based upon its present use or intention, the fabric screen, for example, satisfies the qualifications of each classification. The fabric screen filters light, provides privacy, and divides space, shifting fluidly between the three types. Rather than the categories consisting of rigid boundaries, they represent permeable areas of separation existing for purpose of determining the suitability, based upon qualifications, of an interior object for a particular objective. Consequently, the object types operate better as qualifiers rather than rigid categories.

Following the argument that the serendipitous generative approach provides the potential for a more pure way to achieve despecialization than the other two generative approaches, praxis was developed to design despecialized objects. The praxis entails employing the qualifiers–spacers, workers, and comforters–to determine and evaluate the functional possibilities of generated forms that result from the serendipitous generative approach. Tool-object and comfort-object were renamed to match the occupation noun of the spacer qualifier. In Chapter III and IV, the employment of the qualifiers will be discussed in detail. To summarize, the modifications made to Carreau and Pelletier's theory and application of the despecialization of objects are: (a) use a serendipitous approach to effectively generate despecialized forms; (b) use an additional qualifier, spacers; (c) apply the qualifiers later in the generative process, using them as idea filters; and (d) be cautious to create unfamiliar objects that still give clues to its function.

CHAPTER III

METHODOLOGY

Due to the nature of the serendipitous generative approach, namely the unknown journey that it entails, the Methodology was developed and manipulated throughout the design process. In return, the Methodology overlaps the Results section. The Methodology contains a summary of the procedures and the Results contain more contextual details and the reasons for actions made.

Before the generative process took place, it was understood that the process would be a cyclic process by which a large volume of ideas (objects) are created, analyzed and refined. The ideas would be generated using typical design tools/methods: drawing, model making, digital model making and full-scale prototypes. What were unknown until revealed through the process, was how the ideas would be analyzed and refined; and what measure would be used to reach a single designed product from a large number of initial ideas.

Design Parameters

The serendipitous generative design process begins with no functional or formal intent, but relies on the wandering of the design hand. Thus, from the beginning and throughout the generative process, there were few design parameters such as: functions, shapes, dimensions, scale, materials, finishes, etc. The design context (physical setting), the qualifiers (filters) and ergonomics (human factors) were the three primary sets of parameters loosely defined and enforced.

In order to manage the numerous furniture possibilities, choosing the entrepreneur office as the design context became the first design parameter decision made. Carreau and Hubert created their objects for a residential context. Choosing the entrepreneur office as the design

context offered the opportunity to explore other design options, such as scale, and to encourage a continuation of their research rather than a reiteration of their work.

After the determining the design context, the three qualifiers–workers, spacers and comforters–introduced in Chapter II, were further defined beyond the general definitions provided in Chapter II. The task involved listing characteristics of each qualifier that distinguished it from the other two. To avoid the qualifiers from provoking specific characteristics in the objects, the descriptions were goal oriented and left open for interpretation. For example: offer work surface, contain, organize, manage objects and display, describe the characteristics of workers. See table 1 for the full descriptions (on page 40). Originally, the intent was not to apply the filters to the ideas (objects), during the generative process, until an unspecified time that would reveal itself. It was not known at the beginning at what point in the process that would be and how they would be applied except for the fact that it would occur when a exhaustive amount of ideas have been generated and the filters would help narrow and possible refine selected ideas. The application of qualifiers will be described further in the Method section.

Generically, ergonomics refer the accommodation of various human dimensions and shapes into the design of objects so that the object may be used comfortably and safely. Because integrating human dimensions and shapes early in the generative phase can initially restrict the number of possible ideas, ergonomics were not fully considered in the generative design process until the number of ideas had been narrowed down. At that point, it was decided that the ergonomics would be added to the filtering process of the qualifiers and therefore integrated into individual qualifiers. The comforter qualifier dealt with body shapes while workers addressed the dimensions needed for tasks, such as working surface heights. The Generative Process section discusses in more detail the use of ergonomics.

Record Keeping

During the generative process, visual records and written records of design decisions were taken. All drawings were dated and digitally scanned. Models and prototypes were digitally photographed. Digital models, created in SketchUp, were digitally recorded and converted into digital images. Hand written notes were made spontaneously and eventually transcribed into digital text. The notes are listed in Appendix A.

Generative Process

After the context was determined and the qualifiers defined, the generative process began. As mentioned earlier, the generative process was self-propelled with no planned indicators as to when to make decisions and how to make them. Due to the numerous occurrences of design events, the steps taken are categorized into phases. Each phase is identified by a major design events. The phases are listed in chronological order.

Phase a: Qualifiers

As mentioned above, the qualifiers were defined in greater detail. This was done as continuation of the writhing the final chapter of Chapter II. It seemed necessary to prepare the qualifiers before starting because it was unknown, at the time, when and how they would be used.

Phase b: Sketching 1

This phase began with drawing abstract three-dimensional forms. (See figure 4, page 42). After producing a few drawings, two issues became apparent; the approach to the content of the drawing was too ambiguous and the paper size was too big. The ambiguousness of the approach caused the drawings to lack a furniture sensibility. The paper size, 14" by 17" dictated larger drawings, which in turn took more time to make and more mental effort to draw perceptually accurate detail. This decreased the quantity of drawings and limited the number of ideas. The

large paper size also hindered the quick flow of mental forms onto paper. The initial response was to draw at a very small size and to create more realistic object forms attempting not resemble known furniture types. After filling a page with a series of small drawings, it became apparent that the object ideas were too refined and left little room for reinterpretation. The problem seemed to be that the focus weighted more on functionality than form. Focus was placed on adding shelves here and holes there. In order for there to be a separation from forcing functionality into the objects, the next wave of drawings, now done on 8.5" by 11" paper, were done with eyes closed. Drawing the ideas with eyes closed allowed for a visual separation, which gave way to a mental separation and encouraged spontaneous form generation, and in large quantities. The method for producing blind drawings is described in the Results section on page 40. Eventually, after several pages of blind drawings, it was possible to separate mentally from the drawn ideas without having to close eyes. Each page of drawings was dated and signed. This drawing phase lasted two months, yielding over 130 individual ideas.

Phase c: Qualification and Coding

After approximately 130 drawn ideas were created, the committee chair reviewed them. The 130 ideas consisted of a sweeping array of forms. Many of the forms seemed promising ideas to pursue, but there were too many, especially when considering that the desired outcome was to create a few final designs. At this point, it seemed poignant to use the qualifiers to narrow down the number of ideas to the top five. The committee chair suggested selecting the most "promising" ideas of the 130 and comparing them to each other using a qualitative matrix. The selection process relied on personal preference and the inquiries of fellow design students. Many of the ideas that were over-looked were amorphous and/or redundant. Forty-five ideas were chosen. The matrix compared three qualitative characteristics: formal language type, qualifier

alignment and immediate known object association. Comparing the ideas to each other, it became evident that there were formal trends and in response, formal language types were developed to describe each trend. Six types were identified. Qualifier alignment was used to describe how much or little each object aligned with the descriptions of each qualifier. Values were assigned from 1 to 5. Immediate known association described how much the object visually associated to known furniture types and were also assigned values from 1 to 5. If applicable, a furniture type, that the object was closely associated to, was listed. The hope was using a matrix to compare qualitative values would help make the top ideas become self-evident. Five ideas (objects) were chosen based upon the matrix and personal preference.

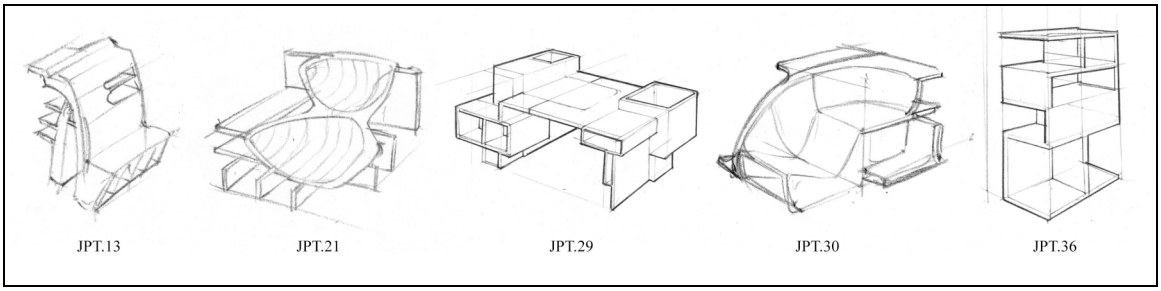

Figure 3: The five ideas chosen

Phase d: Scale Model Making

To understand the ideas better in three-dimensions, scale paper models were constructed. Design opportunities and drawbacks may present themselves that would otherwise be unseen in two-dimensional drawings. Three models (JPT.13, JPT.21, and JPT.36) were constructed out of the five ideas chosen. Three instead of five were constructed. Refining the construction, form and dimensions of a prototype requires intensive effort. Producing five would stretch design efforts thin, affecting the prototypes' design quality.

Phase e: Sketching 2 and Scattered Refinement

A meeting was held with all committee members to discuss all the drawings up to that date, the qualitative matrix and the three ideas. The members suggested generating variations of the three models. Indecisiveness and meandering characterize this phase. Phase e consisted of the exhaustive refinement of the three models and the exploration of other new forms combining both two-dimensional and three-dimensional idea generation. Refinement included the reconfiguration of size and scale to accommodate dimensional standards. After many new ideas were developed, committee member, Novem Mason, suggested exploring new forms of the organic portion of the JP.21 model and developing modular combinations of the geometric model JPT.36. Many variations of JP.13, JP.21, JP.36 and other ideas were created.

Phase f: SketchUp Digital Models

In order to discuss the status of the design process a meeting was held with committee chair. He suggested focusing on constructing one prototype. Again, faced with the problem of spreading design efforts thin, it seemed prudent to narrow down the final prototypes to one. Therefore it would be possible to put more effort in refining one, rather than loosely refining three. JPT.21 was chosen. JPT.21 possessed the most functional versatility and received the highest amount of positive feedback from professors and colleagues. The chair also suggested taking a different approach to the geometric portion of the form by using the ribbon vocabulary. Constructed two paper models of different bases. There was a need for increased volume of variants beyond the two paper models. To increase the volume of variants, the digital three-dimensional program, SketchUp was used. SketchUp allows for quick construction and modifications, excellent for generating many variants of preceding variants. Twenty-three variations of the base were created. The last variant created was a combination of the best features of the preceding SketchUp variants. It was selected for building.

Phase g: Prototype Construction

Building of the full size rough prototype began. Medium Density Fiberboard (MDF) was used to make the base. MDF is quick to cut and sand. Rigid blue foam insulation was used to do the organic portion of the JP.21 variant. Blue foam was used because of the ease at which it can be carved into organic forms. After most of the base was done, the organic part was carved out of laminated three-inch thick rigid blue foam. Screws were used to assemble the MDF components. Because SketchUp can create dimensionally accurate models, measurements were directly taken from SketchUp. Even though the measurements had been determined in SketchUp, this did not mean that the generative process had ended. Changes were continually made. Function and form were still being developed. While assembling some of the parts, it was decided to simplify the base after seeing the elegance of the basic form. The blue foam component was tested for comfort while sculpting. The smaller seat was made proportionately wider for ergonomic reasons. The slit, which was originally intended in the final SketchUp model, was cut out, yet doubted whether a slit would work. However, in the end, the slit added more function and balanced the shape better.

A refined prototype was constructed. Final materials were decided according to finish tests. Plywood was used for the base. Fiberglass was used for the organic portion. Plywood is lighter and stronger than MDF. Base and organic portion were painted the same color, white. White was chosen to subdue the dynamic form. Bright green was added to some of the cavities to visually enhance the prototype.

CHAPTER IV

RESULTS

Chapter IV records all the drawings, data, models, and prototypes produced during the creative generative process. As mentioned above in Chapter III, the results are partitioned into chronological phases, each phase identified by a key turning point in the generative process. Phase b will explain the blind drawing method. Phase c will describe in greater detail how the ideas were coded and rated. Notes taken during the design process are included in Appendix A.

Phase a: Qualifiers

Table 1
Qualifier Descriptions for Small Entrepreneur Office

Qualifier	Formal Language	Definition	Conceptual Functions	Physical Characteristics
Spacer	Geometric and Organic	Defines space through connection or disconnection	Privacy Create community Vertical "screen" Separation of space Link separated space Connecter or Disconnecter	Filter light/glare Filter sound Manipulate "mood" of space Large visual real-estate Thin walled Block line of sight
Worker	Geometric	Supports utilitarian operations	Horizontal work surface Linear storage Open storage Closed/hidden storage Organize Contain Object management Encourage visual accuracy Display	Flat horizontal panels Protrusions Cavities Enclosures "Dividers" (separate items) Cutouts (holes) Dimensional standards Ergonomic
Comforter	Organic	Appeals to the five human senses	Visual comfort Relax Supporting long term tasks Encourage community Soften Art: 2D/3D Textures Healthiness	Support body Ergonomic

Phase b: Sketching 1

Figures 4 through 23 display only the pages of sketches that contain the selected ideas (JPT.1-JPT.45) for qualification. The figures are ordered chronologically rather according to name. A temporal order displays the sequence of thought. The remainder sketches are contained in Appendix C.

The first series of object sketches were produced using blind drawing. Blind drawing refers to the designer closing their eyes while drawing an object idea. The process performs in the following order: (a) Look away from paper or close eyes. (b) Envision a generic shape in mind or while looking at a shape in the surrounding environment, convert that into a generic shape in mind. (c) Still not looking, place pencil on paper and attempt to represent the generic shape, drawing light lines and marks. (d) Look at paper once there seems to be enough marks. (e) Draw on top of the marks to convert the marks into a concrete, perceptually accurate object. Using some imagination, creativity and design experience, a tangible object can be "pulled" up form the marks. The lines and marks can suggest corners and intersections of planes and shapes.

This method is clearly seen in many of the following drawings. Figures 7 through 17 show the "random" marks from the blind drawing process. Notice, that several of the marks were never transformed into concrete objects. For those particular cases, it was challenging to "pull" an object from the marks. Other non-blind drawings were sketched to expand on particularly interesting ideas. Figures 3 through 6 were produced before the blind drawing method was used.

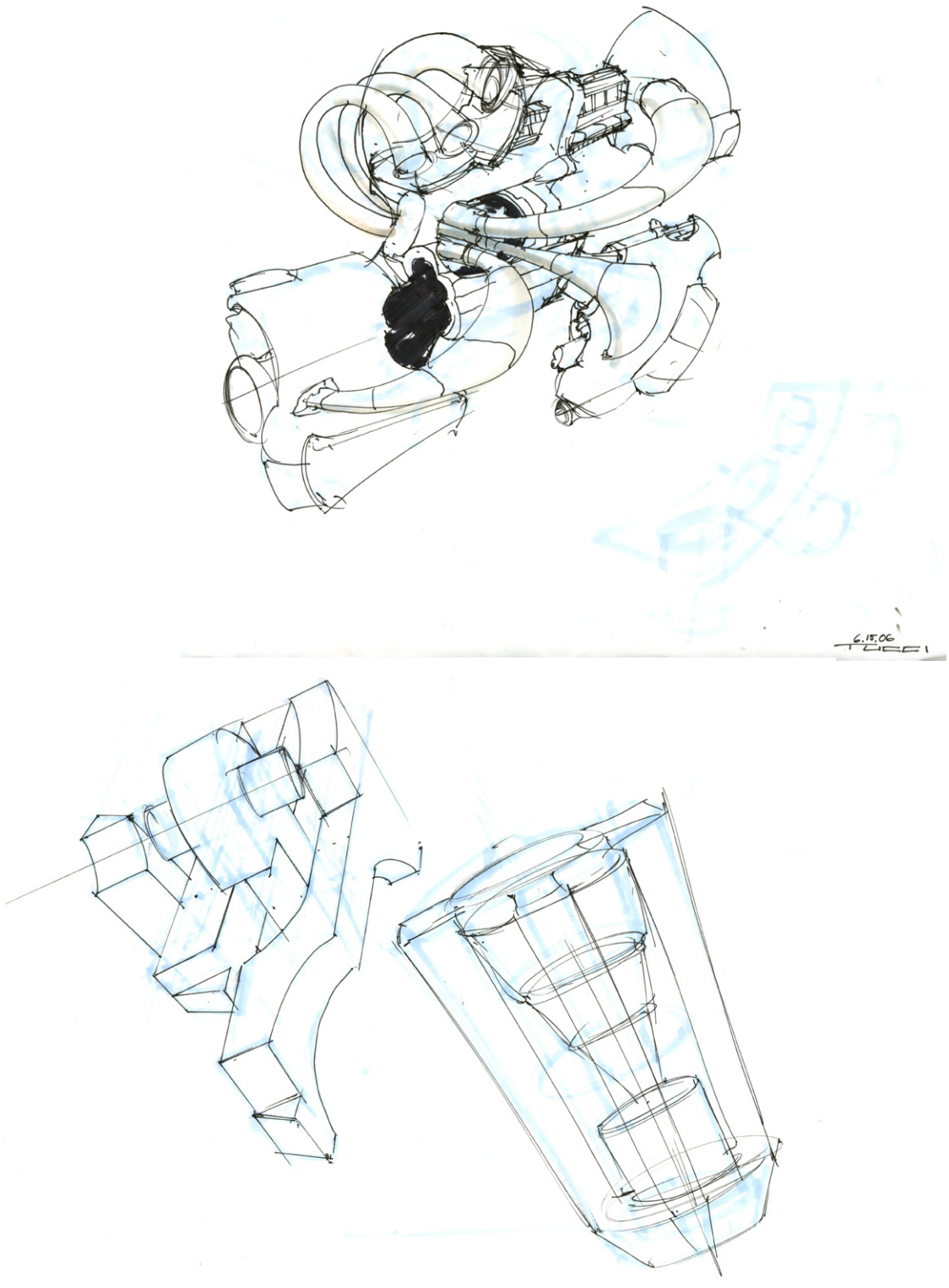

Figure 4: Phase b–three abstract drawings

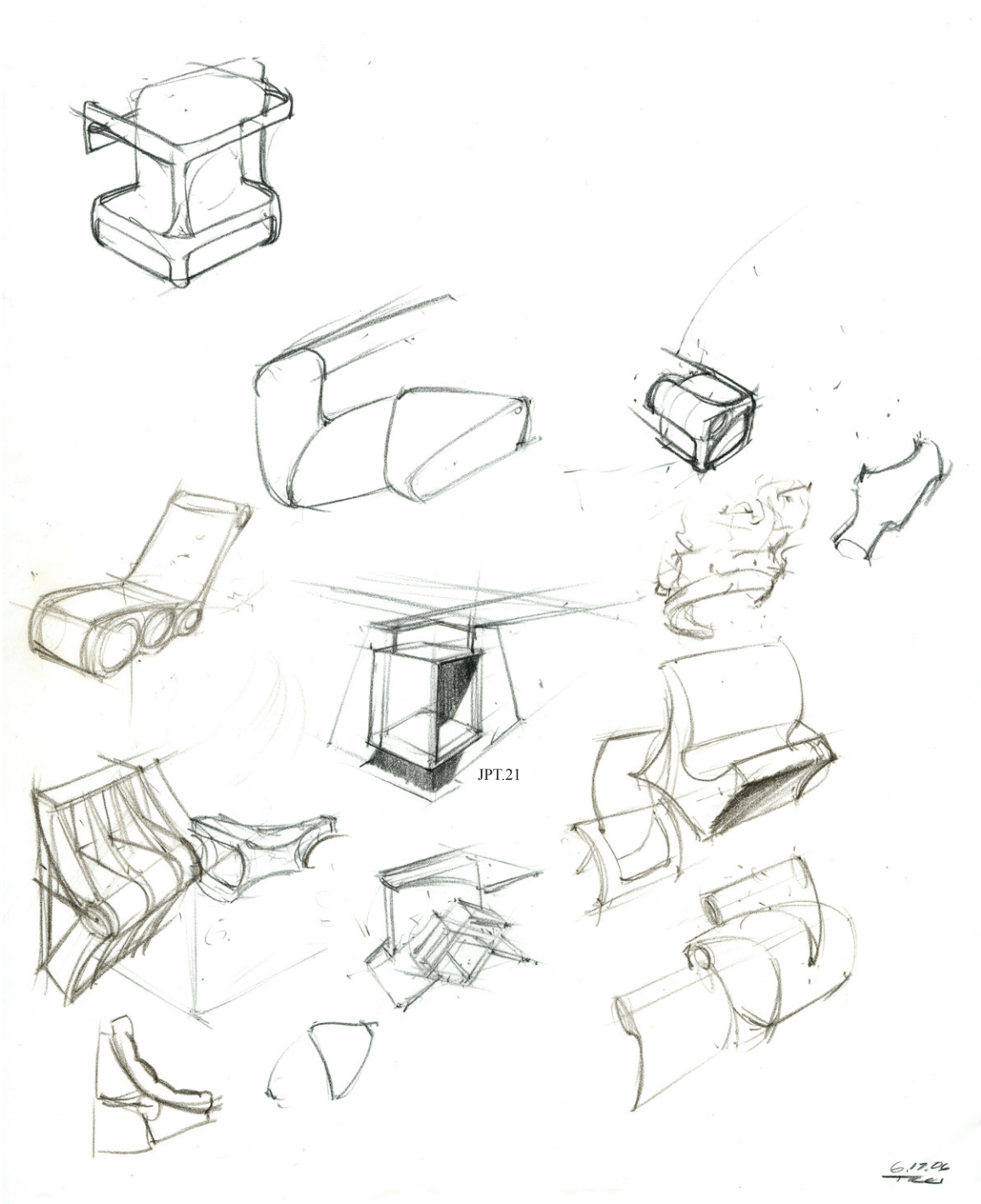

Figure 5: Phase b–sketch 1

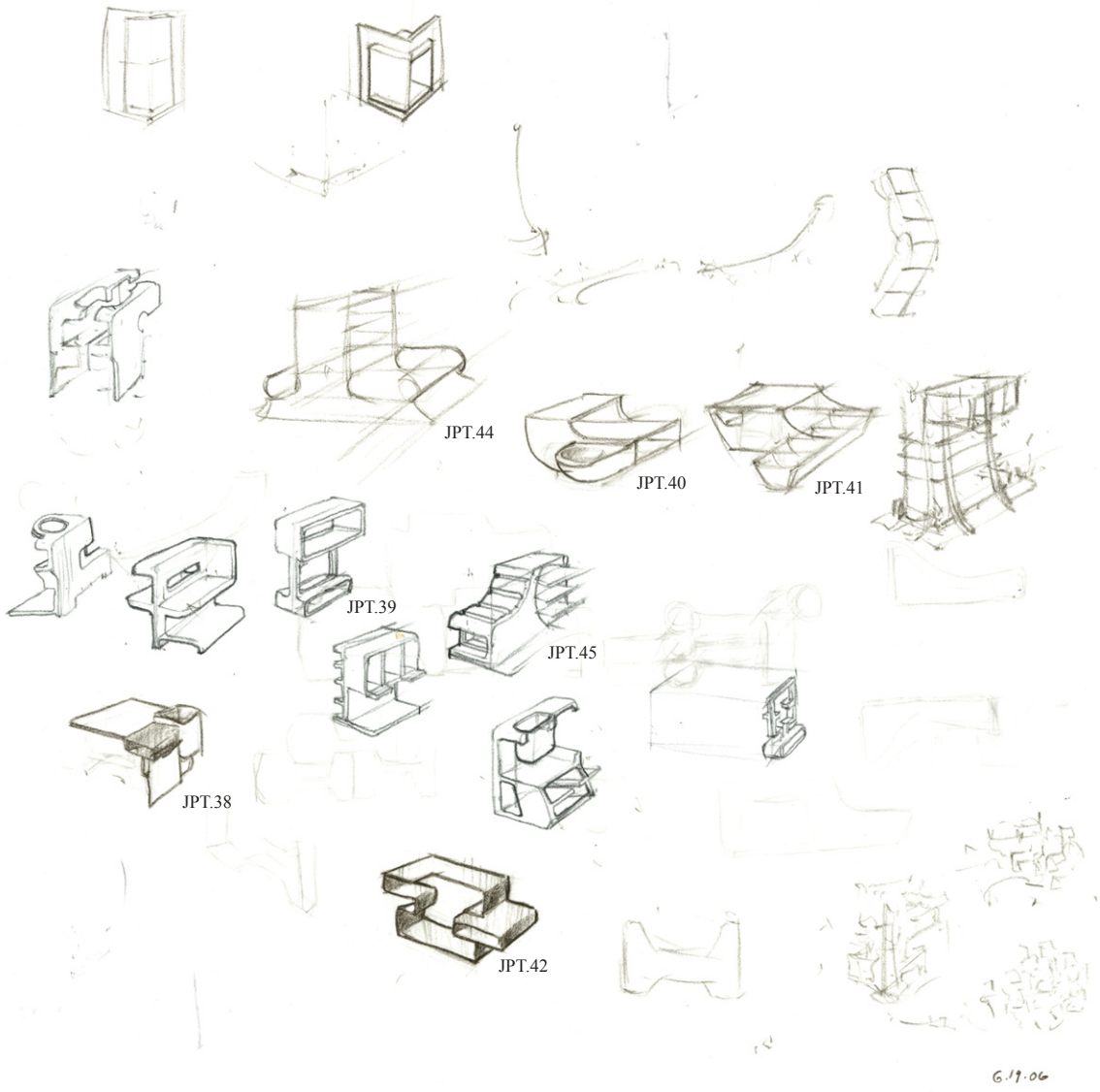

Figure 6: Phase b–sketch 2

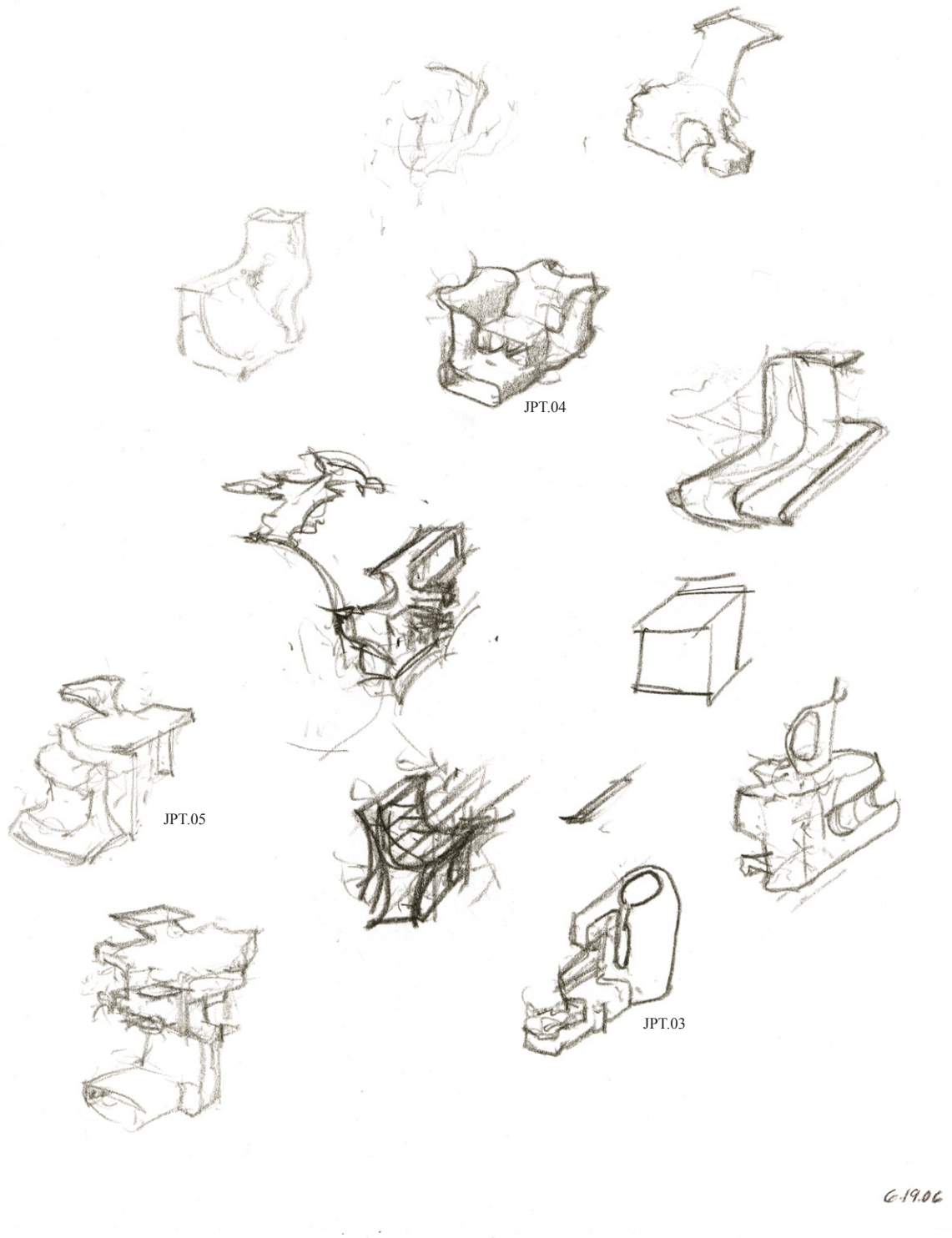

Figure 7: Phase b–sketch 3–first set of blind sketches

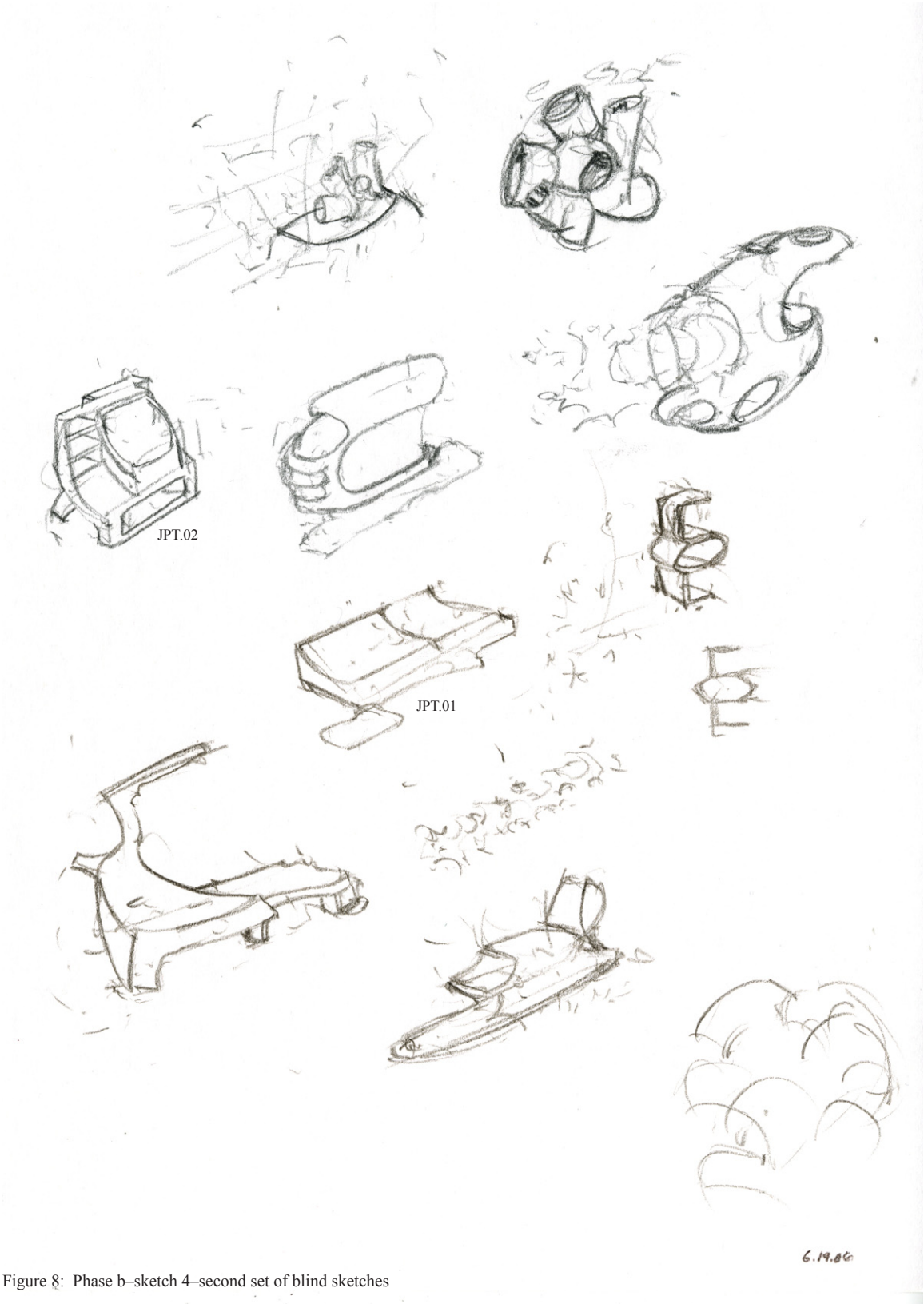

Figure 8: Phase b–sketch 4–second set of blind sketches

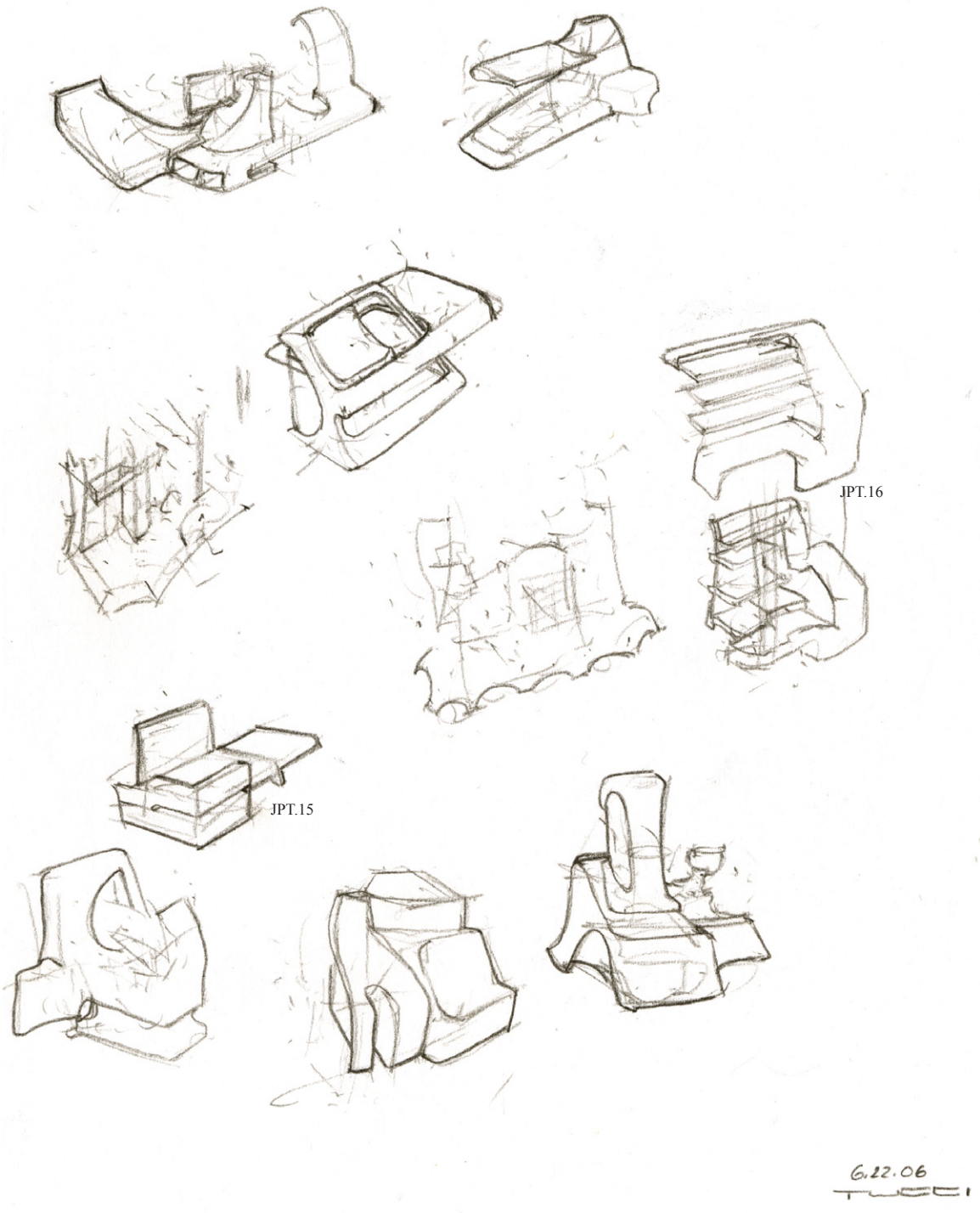

Figure 9: Phase b–sketch 5–third set of blind sketches

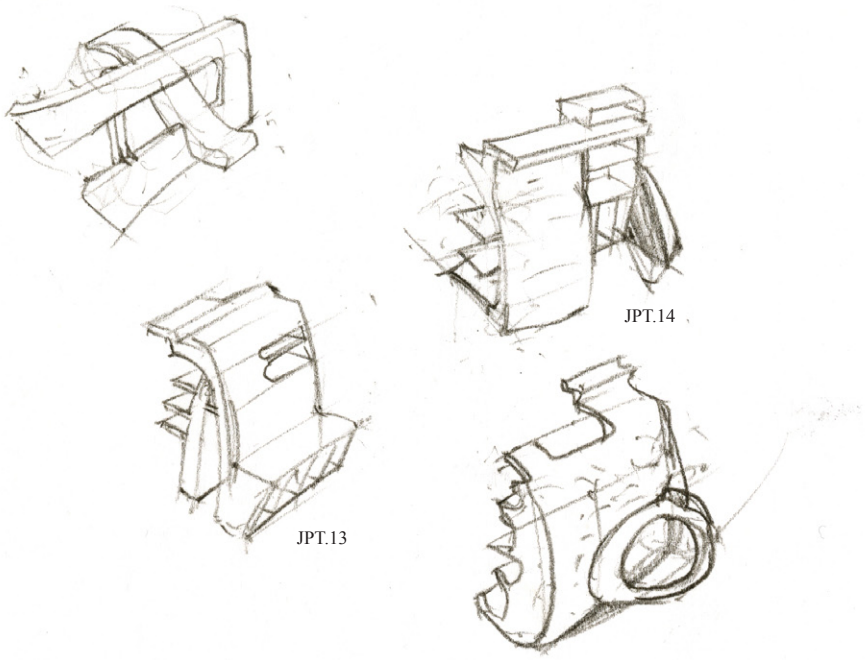

Figure 10: Phase b–sketch 6

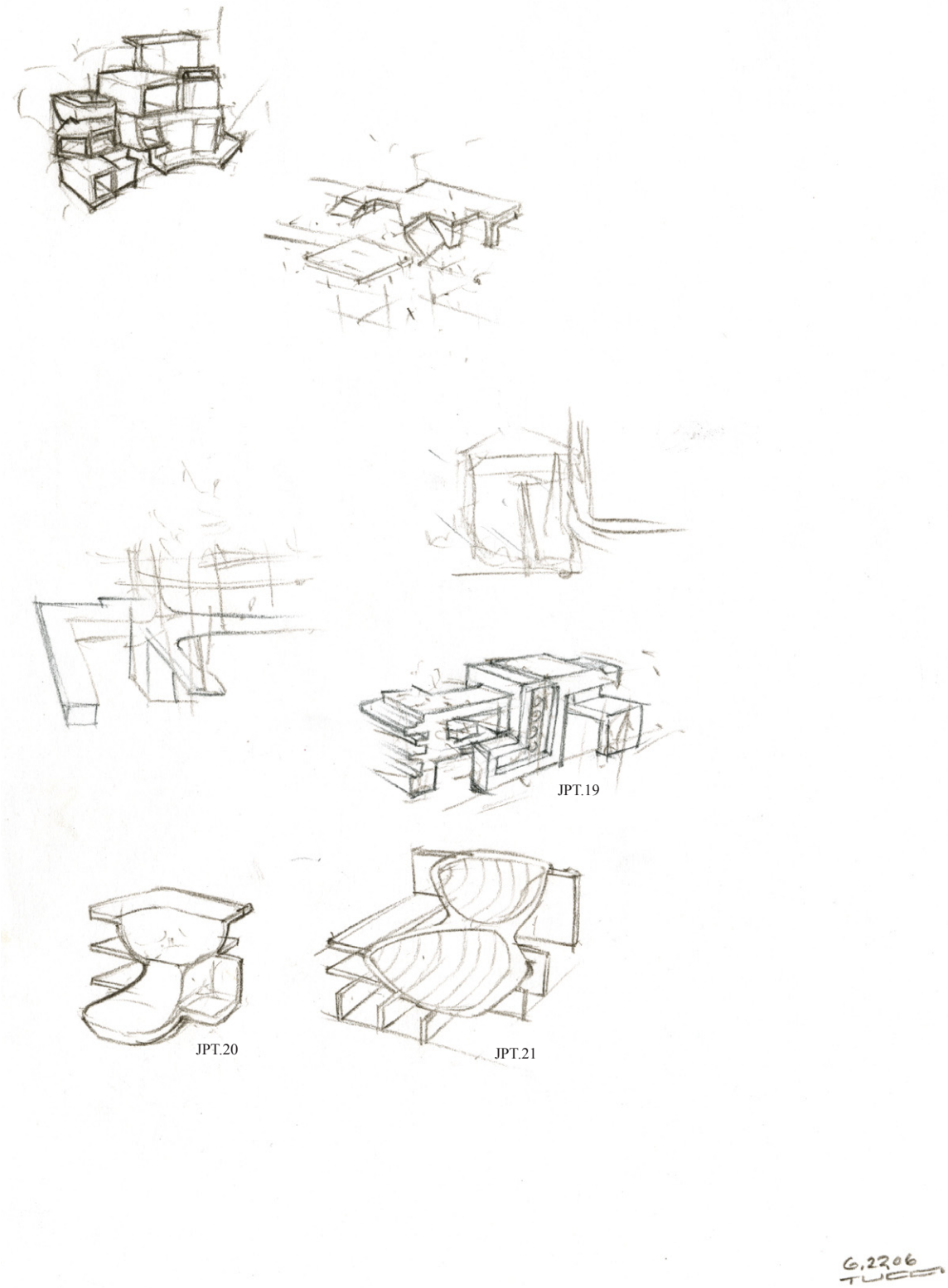

Figure 11: Phase b–sketch 7

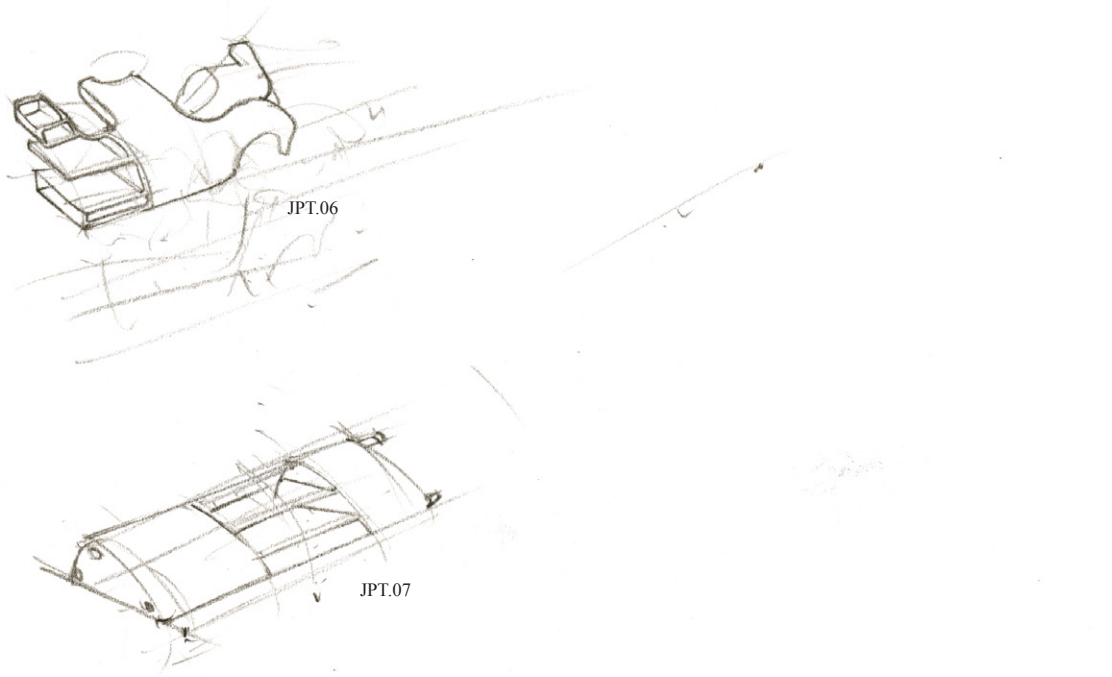

Figure 12: Phase b–sketch 8

6.23.06
TUCCI

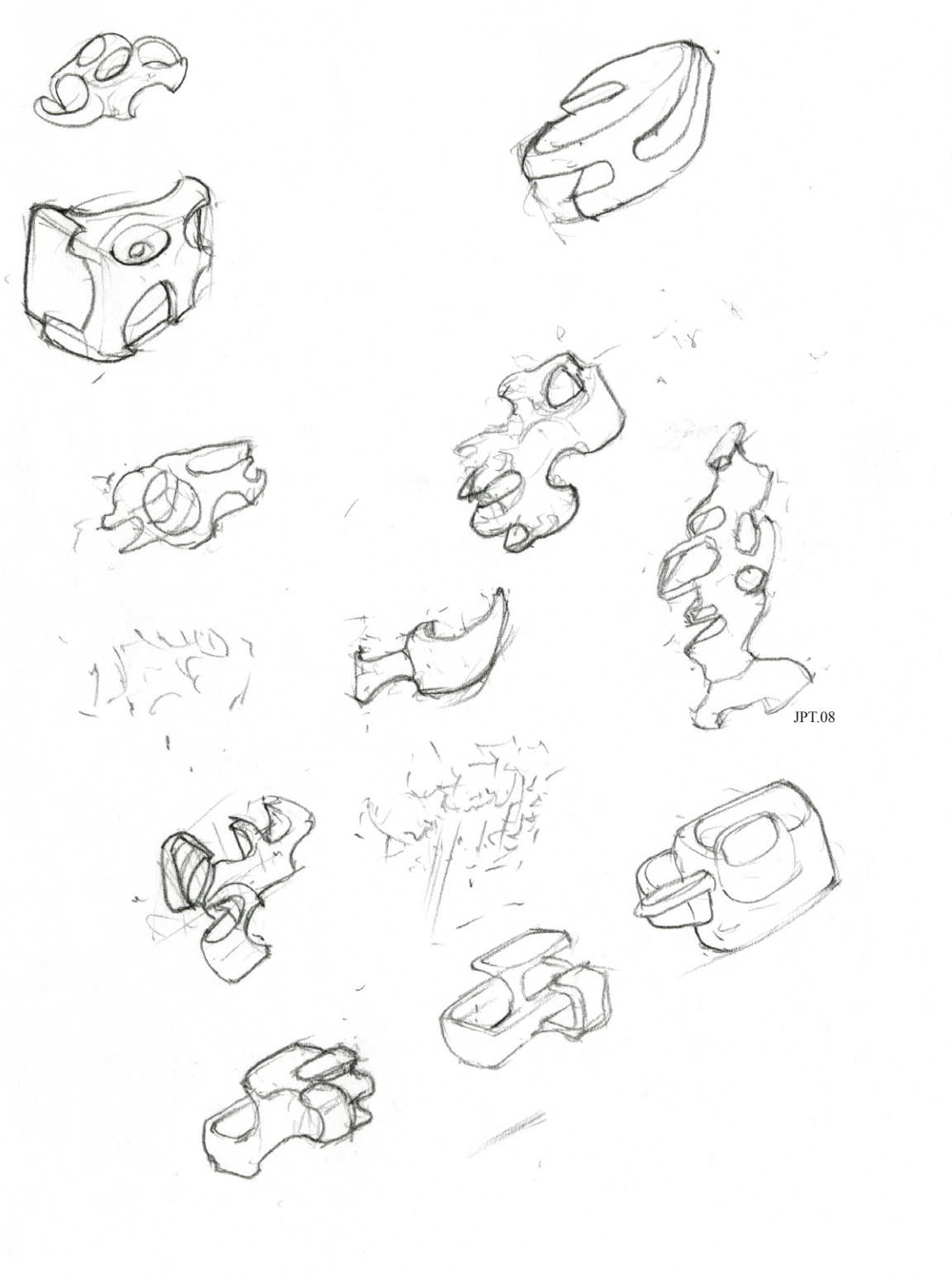

Figure 13: Phase b–sketch 9

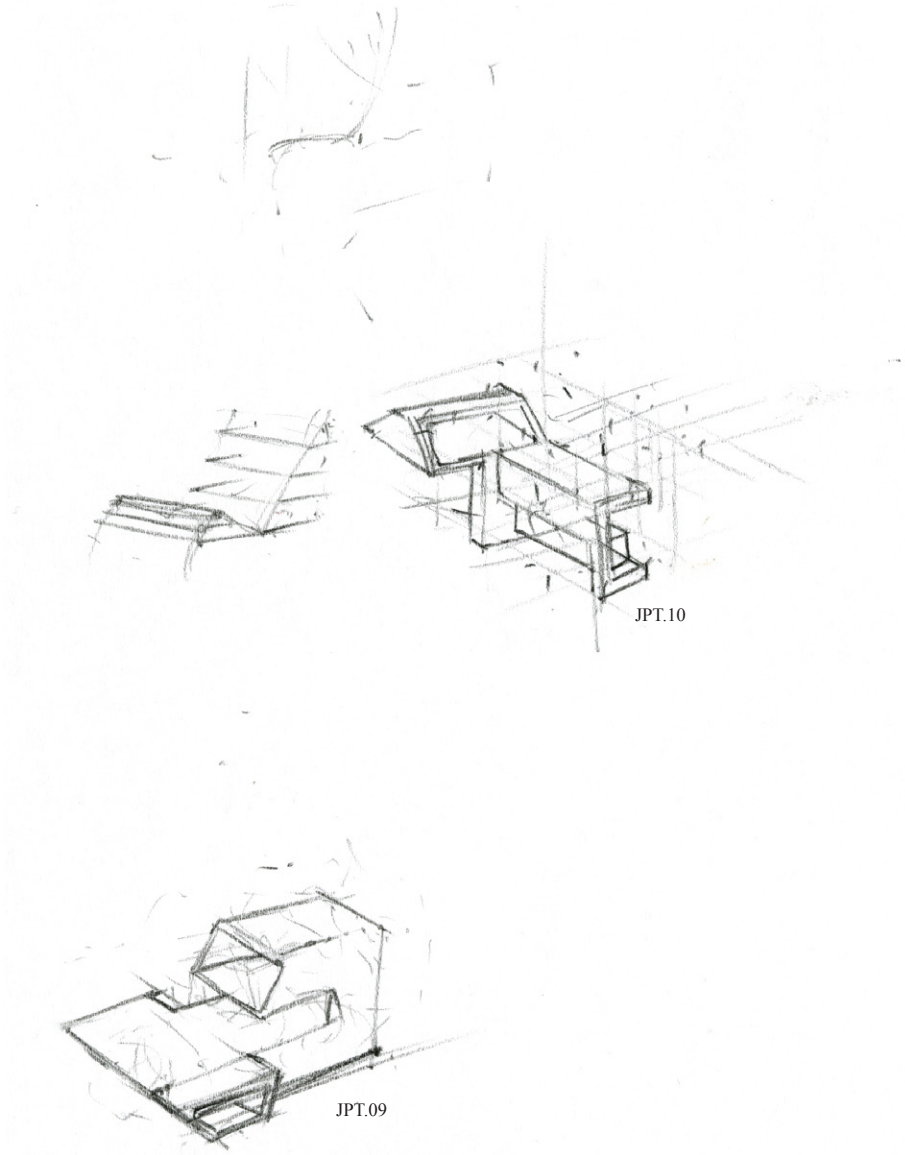

Figure 14: Phase b–sketch 10

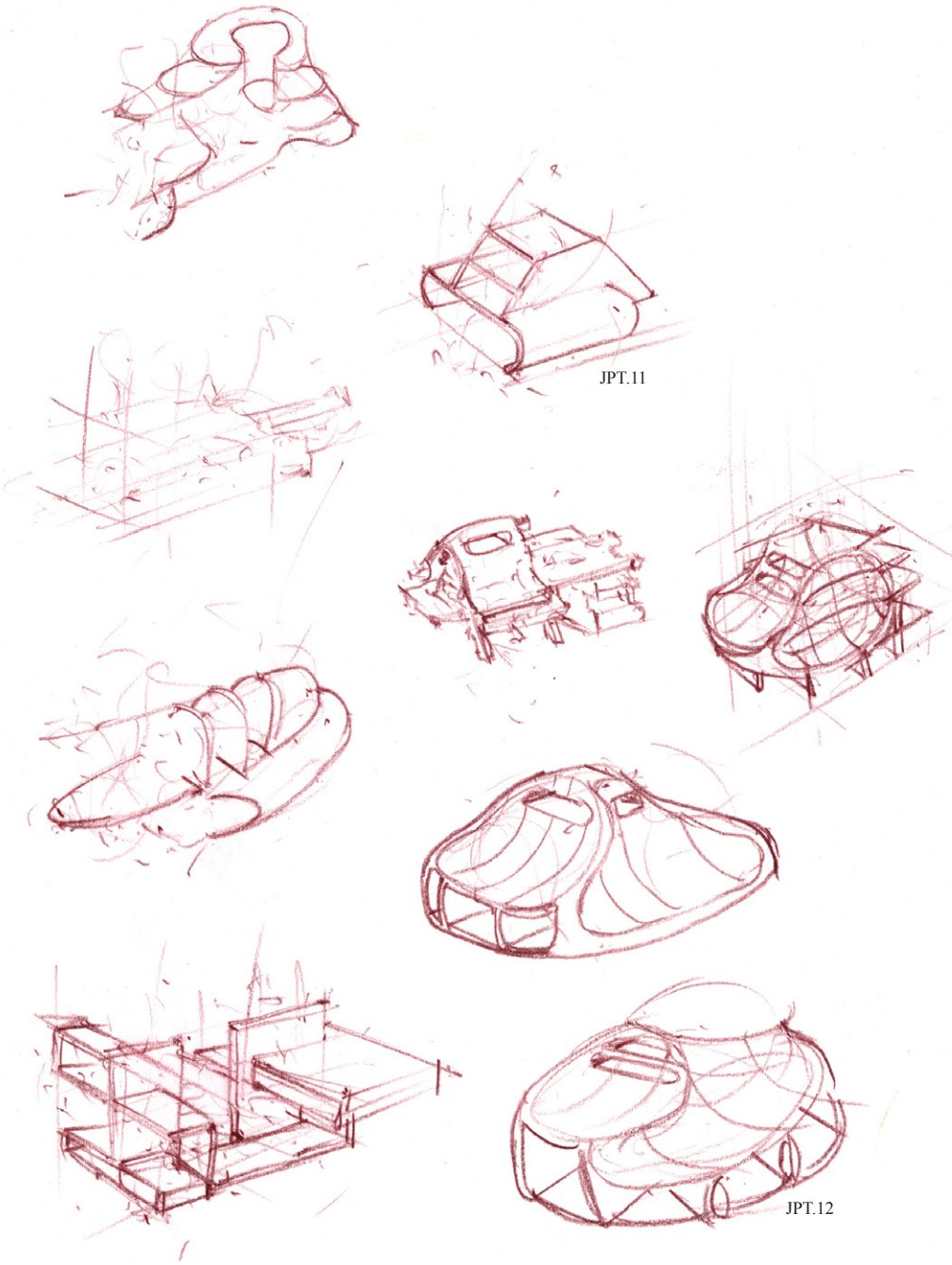

Figure 15: Phase b–sketch 11

7.8.06
TUE

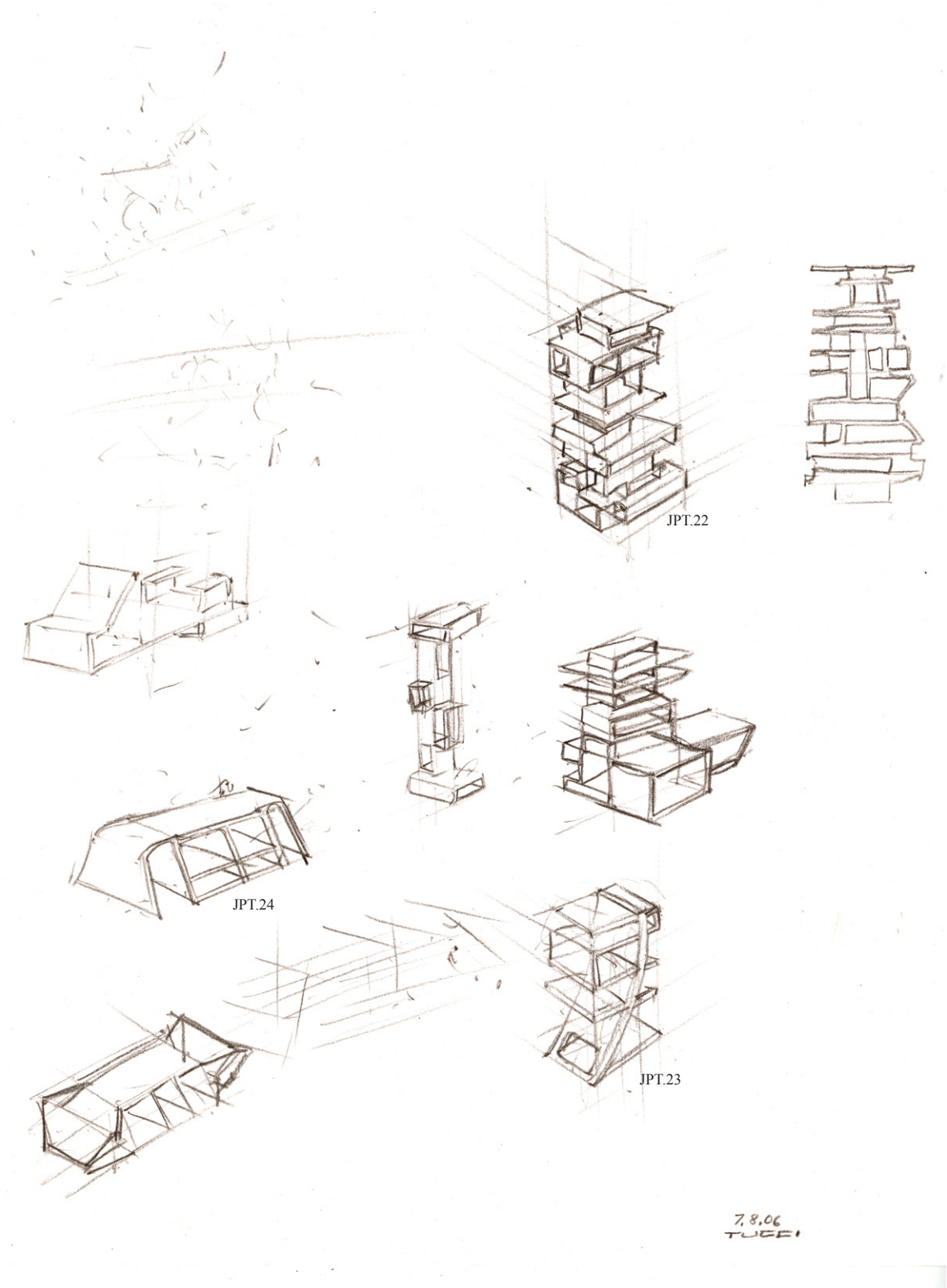

Figure 16: Phase b–sketch 12

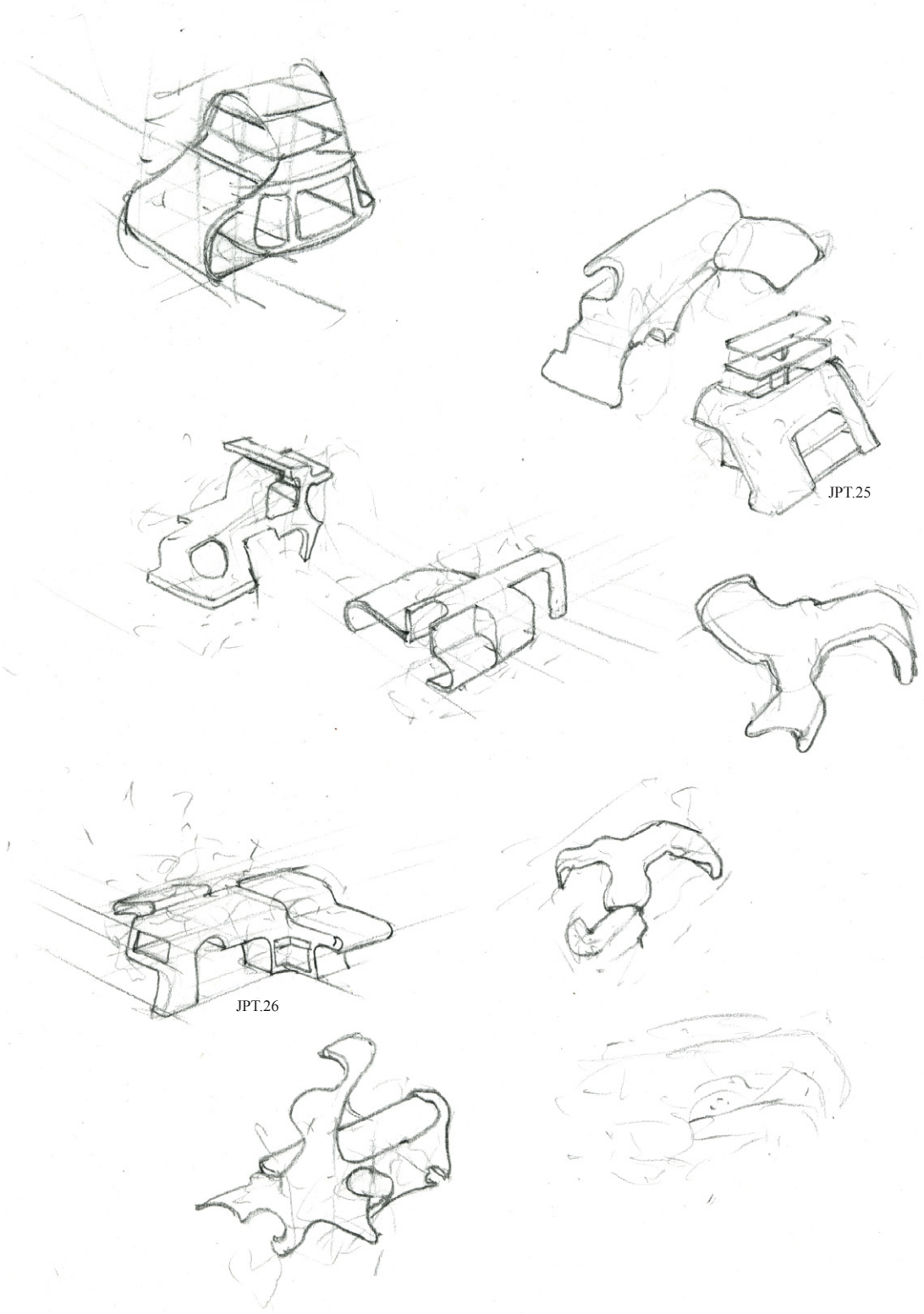

Figure 17: Phase b–sketch 13

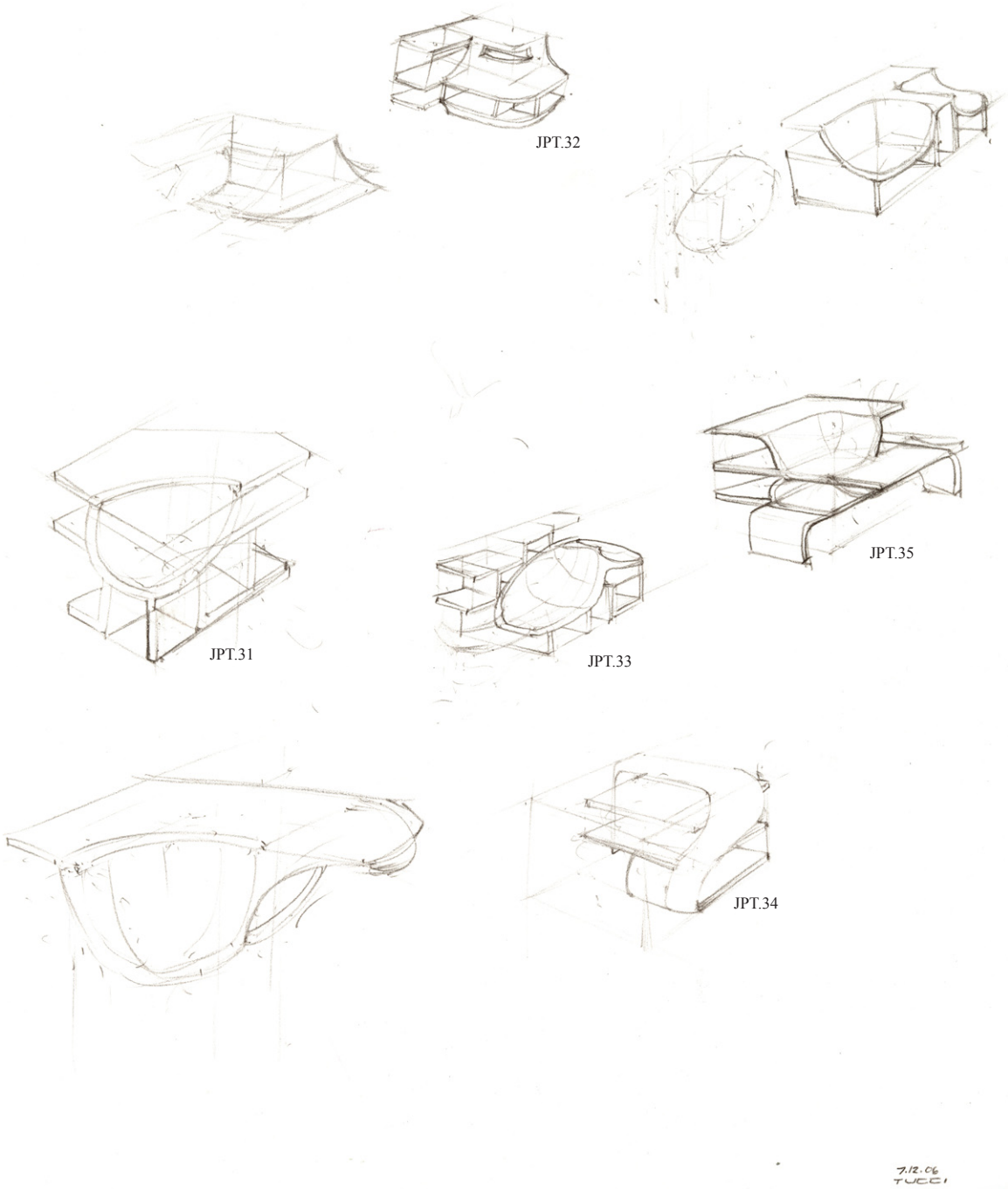

Figure 18: Phase b–sketch 14

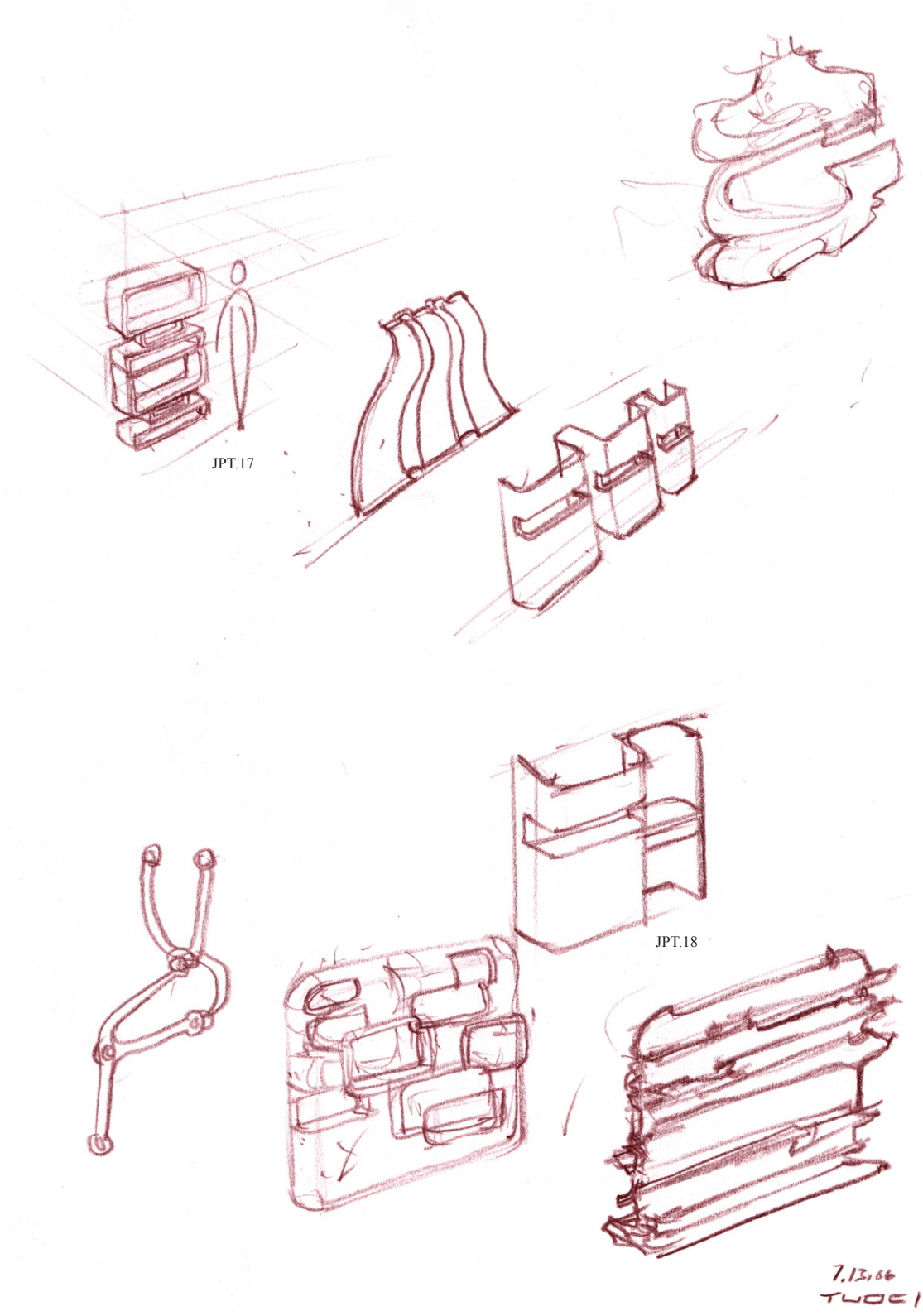

Figure 19: Phase b–sketch 15

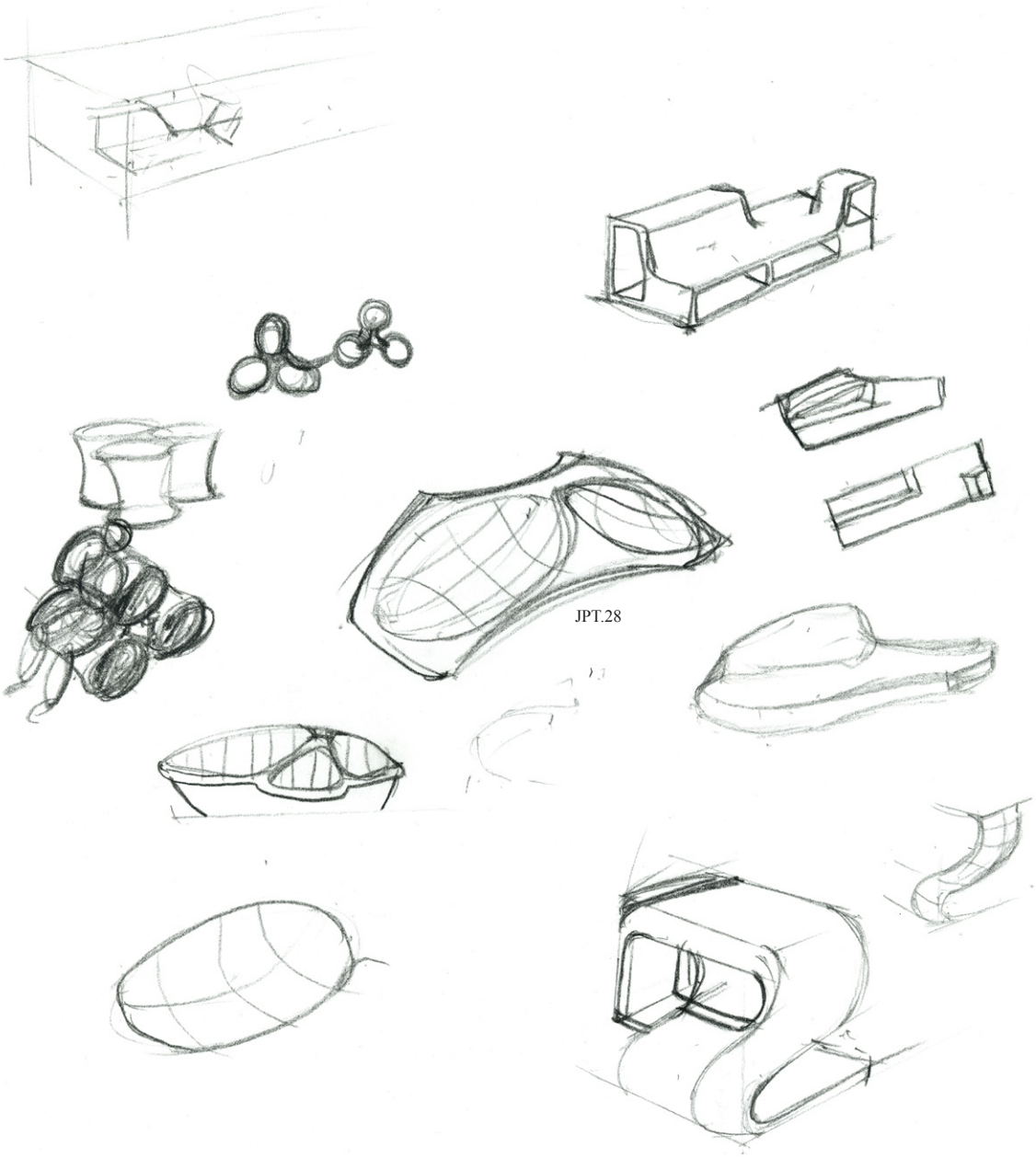

Figure 20: Phase b–sketch 16

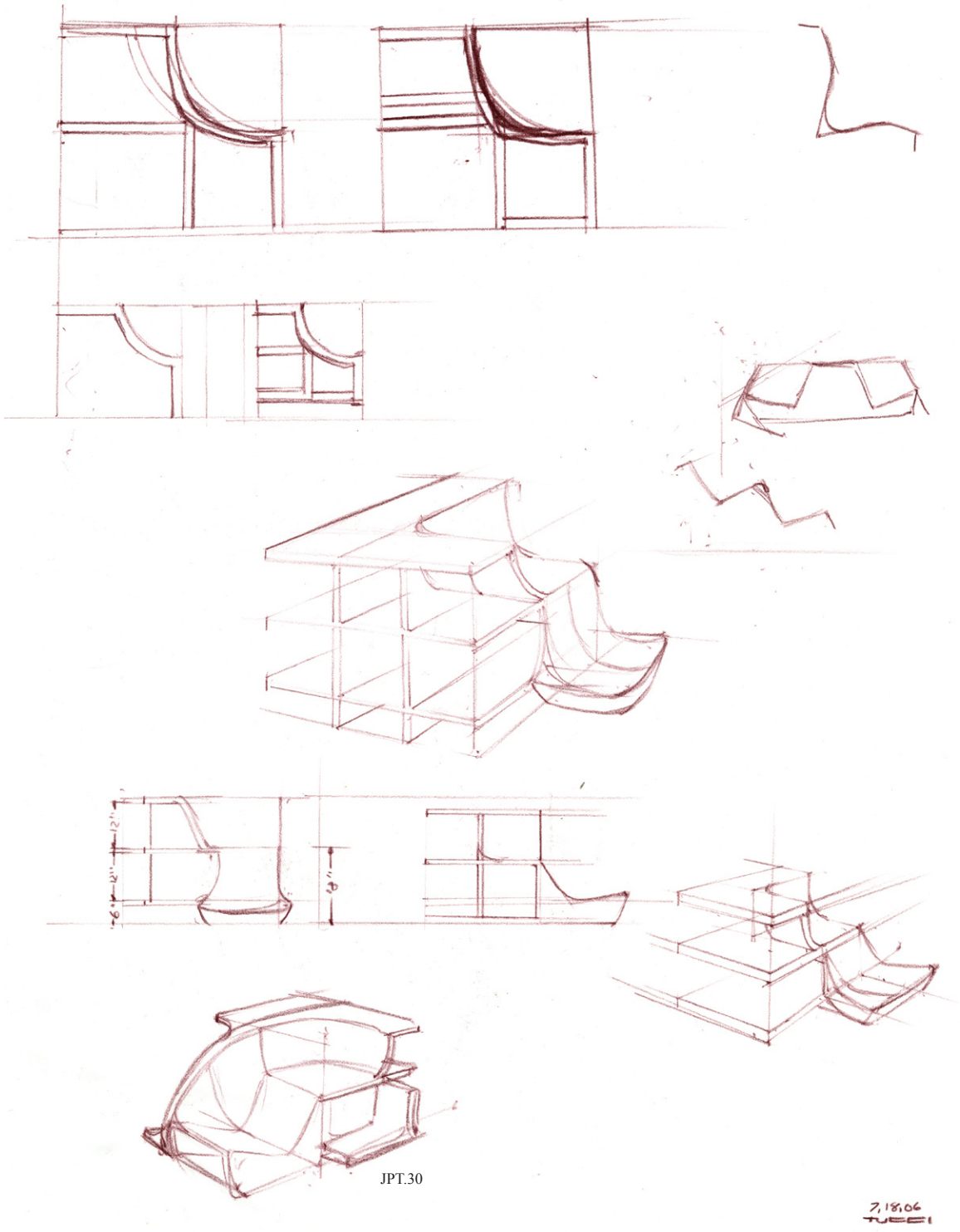

Figure 21: Phase b–sketch 17

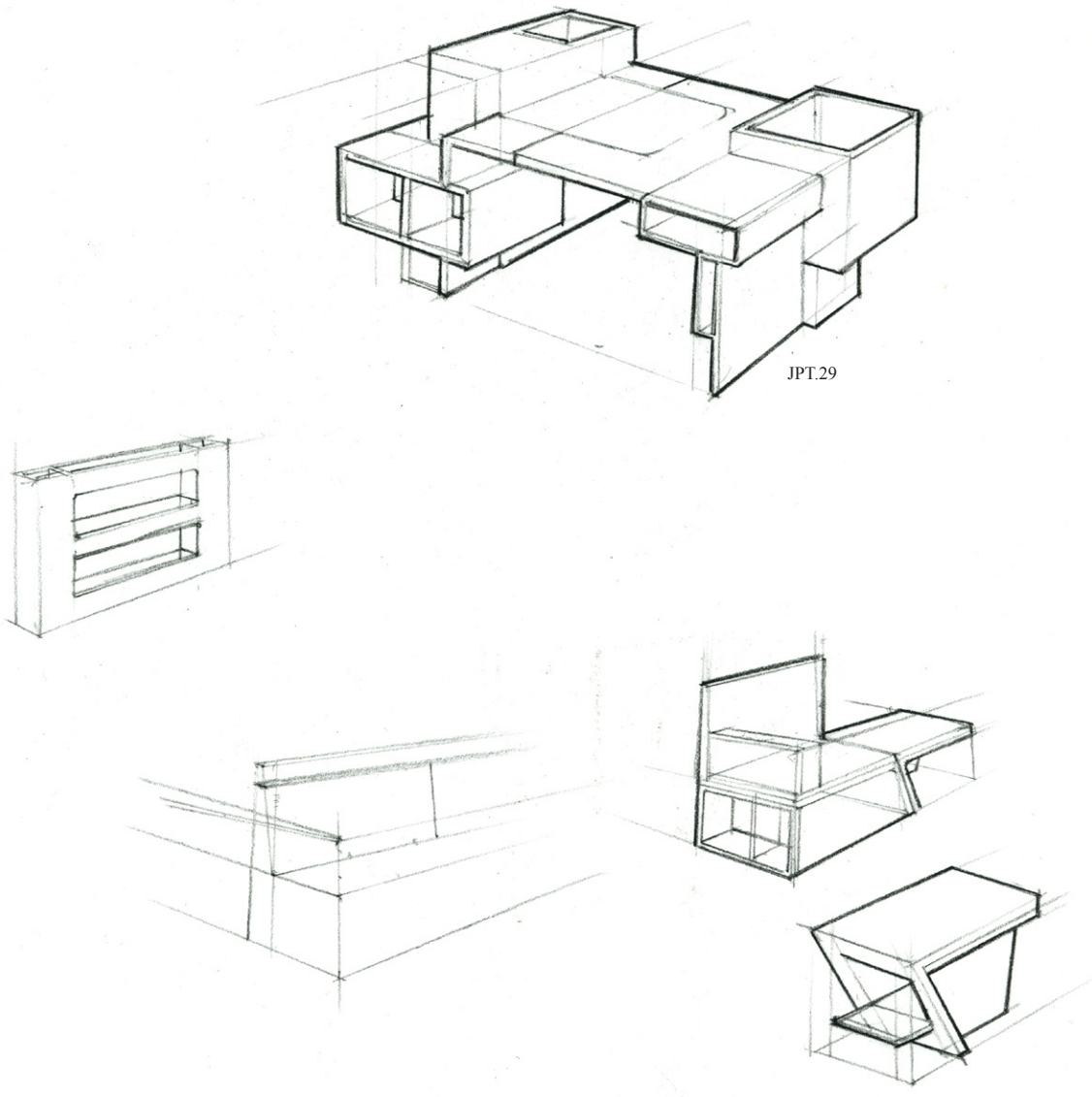

Figure 22: Phase b–sketch 18

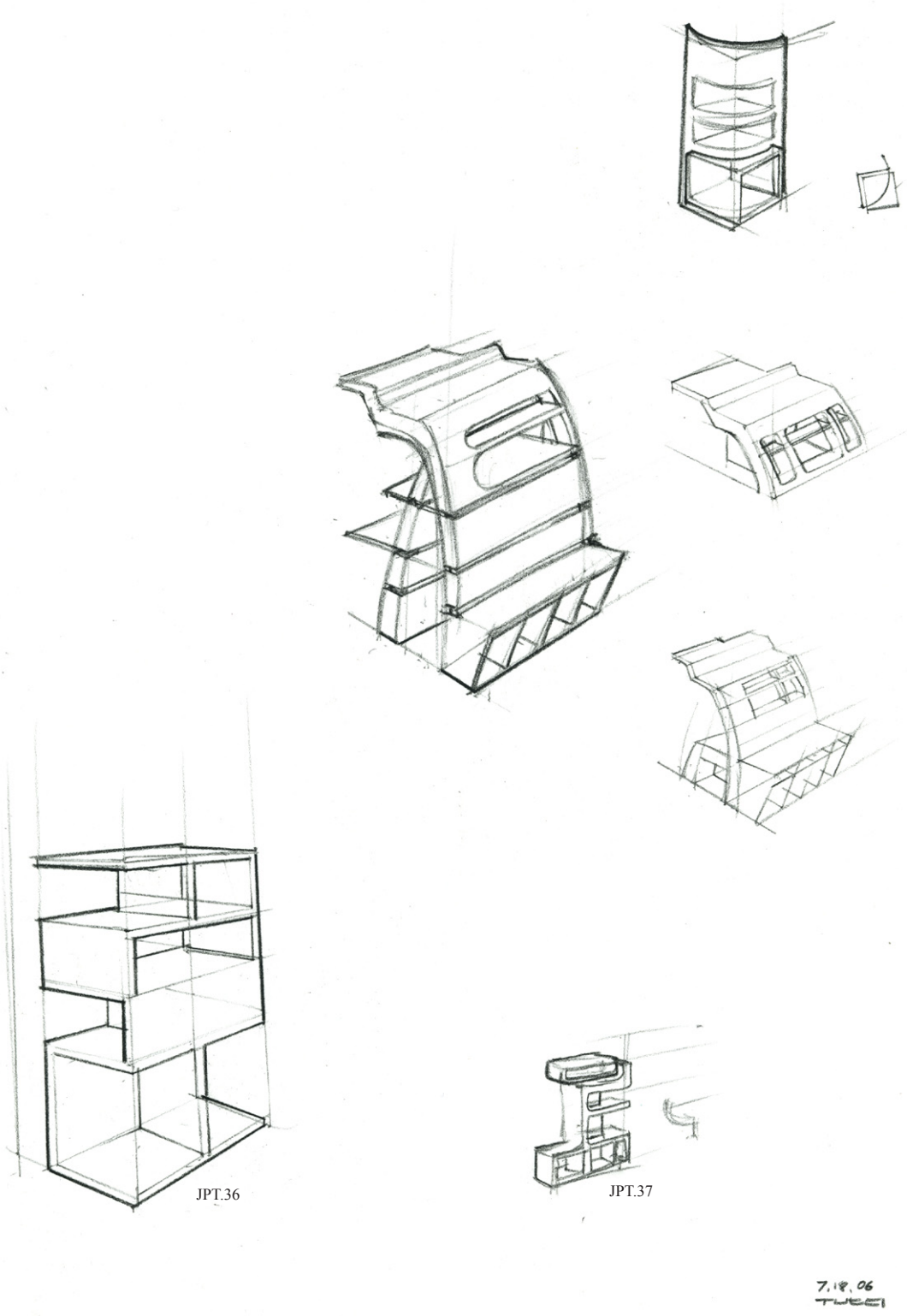

Figure 23: Phase b–sketch 19

Phase c: Qualification and Coding

As stated in the Methodology chapter, in order to narrow down the 130 drawings produced in phase b, a matrix was used to compare the top 45 ideas. Each idea was given both the prefix JPT (the author's initials) and a consecutive number between 1 and 45. In the previous figures, 5 through 23, the code names are labeled below each of the corresponding forty-five chosen ideas. Three characteristics were evaluated: formal language types, qualifier alignment and immediate known object association.

The formal language types were based upon how the objects appeared to have been physically created; not manufactured, but more conceptually sculptured.

1. Melted Mass: amorphous shape that appears melted under its own weight.
2. Molded Cast: resembles the look of a cast iron or aluminum part.
3. Shell: thin hollow remains of a form.
4. Three Axis Geometric Extrusion: geometric form extruded along the three Cartesian coordinates, x, y, and z.
5. Geometric Interruption: a geometric form that has been intersected and or interrupted by a curvilinear form.
6. Ribbon: form created from a continuous line or plane that changes directionally.

Each object was assigned a value for qualifier alignment. Qualifier alignment describes how much or little the object aligns to the characteristics of each of the three qualifiers. The alignment was measured from 1 to 5. The values indicated the following:

1. Not evident (obscure)–sure
2. Slightly evident–doubt
3. Partially evident–disputable
4. Substantially evident–doubt

5. Evident–sure

Level of doubt was added to the value scale in order to better judge the difference between a value of 1 and 2 and a value between 4 and 5. A high value of 5 was not necessarily a good value. An object that was easily distinguishable could suggest that it associated too easily with a know furniture type. For this reason, association was measured as well. Association used the same value scale as qualifier alignment. A value of 1 signified the object had no immediate association to a known furniture type, while a value of 5 indicated the object immediately associated with a known furniture type, such as desk. Furniture, that the objects resembled, was listed beside those objects with a value of 2 or higher. Objects with a value of 1 were considered having no association and therefore no furniture was listed for them.

After much deliberation, the objects were presumed to have the most potential when those that had both a high score, for at least one of the qualifiers, and a score between 2 and 3 for immediate association. The total qualifier alignment score was also was considered. Generally, the higher the total, the more functional potential the object was presumed to have. A score of 1 for immediate association was not as desirable because the object must contain some association, as Umberto Eco suggests (1997). Therefore, the user would have clues how to use the object. Some association could be added later in the design process. The five ideas with the most functional potential and, almost as important, the five that depicted the theory of despecialization the best, were selected. Functional potential included the ability to be rotated. The five ideas were chosen for the following reasons:

1. JPT.13 scored a high qualifier alignment total. JPT.13 possesses a large amount of spacer and worker potential. JPT.13 is tall and narrow and includes work surface and storage potential. Also, JPT.13 attracted people's attention and appeared to be a novel form.

2. JPT.21 received the most positive response from people as an interesting, novel and functional idea. JPT.21 scored high as a comforter and worker.
3. JPT.29 scored high as worker. JPT.29 offered work surface and extensive storage potential. Also, its form appeared attractive.
4. JPT.30 scored high as comforter and worker. JPT. 30 offered substantial seating potential and received positive feedback as being a novel idea. JPT.30 is a distant variant of JPT.21.
5. JPT.36 has a generic form. JPT.36 scored high as a spacer and worker. JPT.36 offered storage potential and seating potential, if oriented horizontally. JPT.36 also received positive feedback.

Table 2
Object Despecialization Evaluation Matrix

				Qualifier Alignment				Immediate Known Object Association	
Name	Language type	LT Code	Form	Spacer	Worker	Comforter	Total	Association	Resemblence to
JPT.01	Melted Mass	1	Curv	3	1	5	9	4	Low Seating
JPT.02	Molded Cast	2	Comb	4	5	3	**12**	3	Shelving Unit
JPT.03	Molded Cast	2	Comb	2	3	3	8	**1**	Mechanical
JPT.04	Shell ?	3	Curv	1	2	4	7	4	Seating (arms)
JPT.05	Molded Cast	2	Comb	1	3	2	6	4	Desk
JPT.06	Molded Cast	2	Comb	1	4	3	8	2	
JPT.07	Molded Cast ?	2	Comb	2	4	3	9	4	Bench, Console
JPT.08	Melted Mass	1	Amor	4	4	2	10	3	Coral, Sculpture
JPT.09	3 axis rectangular extrusion	4	Rect	1	5	2	8	**1**	
JPT.10	3 axis rectangular extrusion	4	Rect	2	5	1	8	3	Desk
JPT.11	Shell ?	3	Comb	1	5	3	9	2	Shelving unit, Small table
JPT.12	Geometric interruption	5	Comb	2	3	5	10	3	lounge seating, shelving
JPT.13	Molded Cast	2	Comb	4	5	3	**12**	3	Shelving unit, desk
JPT.14	Molded Cast	2	Comb	4	5	1	10	4	Shelving unit, desk
JPT.15	3 axis rectangular extrusion	4	Rect	1	3	3	7	**1**	
JPT.16	Ribbon	6	Comb	4	5	4	**13**	4	Shelving Unit
JPT.17	3 axis rectangular extrusion	4	Rect	5	5	1	11	5	Shelving, "trendy" shape
JPT.18	Ribbon	6	Rect	5	4	2	11	4	Partician, shelving
JPT.19	3 axis rectangular extrusion	4	Rect	1	4	2	7	2	Desk
JPT.20	Geometric interruption	5	Comb	2	4	4	10	**1**	Shelving
JPT.21	Geometric interruption	5	Comb	1	3	4	8	**1**	Shelving, seating
JPT.22	3 axis rectangular extrusion	4	Rect	3	5	1	9	2	Shelving unit
JPT.23	3 axis rectangular extrusion ?	4	Rect	4	4	2	10	3	Shelving unit
JPT.24	3 axis rectangular extrusion	4	Rect	2	4	3	9	4	Bench, Shelving
JPT.25	Shell	3	Comb	3	5	3	11	3	Shelving unit
JPT.26	Molded Cast	2	Comb	2	5	4	11	3	Desk
JPT.27	3 axis rectangular extrusion	4	Rect	2	5	1	8	2	Box
JPT.28	Geometric interruption ?	5	Curv	3	1	5	9	2	Lounge seating
JPT.29	3 axis rectangular extrusion	4	Rect	2	5	1	8	3	Desk
JPT.30	Geometric interruption	5	Comb	3	3	5	11	2	Seating, Shelving
JPT.31	Geometric interruption	5	Comb	1	5	3	9	3	Shelving unit, Small table
JPT.32	Molded Cast ?	2	Comb	1	5	4	10	2	Shelving
JPT.33	Geometric interruption	5	Comb	2	5	5	12	2	Seating, Shelving
JPT.34	Ribbon	6	Comb	2	4	3	9	2	Shelving unit
JPT.35	Geometric interruption	5	Comb	1	4	4	9	2	Shelving, Bench
JPT.36	3 axis rectangular extrusion	4	Rect	4	5	2	11	2	Shelving Unit
JPT.37	3 axis rectangular extrusion ?	4	Rect	4	5	2	11	3	Shelving Unit
JPT.38	3 axis rectangular extrusion	4	Rect	3	5	1	9	2	Desk
JPT.39	3 axis rectangular extrusion ?	4	Rect	3	5	2	10	3	shapes
JPT.40	3 axis rectangular extrusion ?	4	Rect	1	4	4	9	1	
JPT.41	3 axis rectangular extrusion	4	Rect	1	5	4	10	2	Shelving unit
JPT.42	Ribbon	6	Rect	1	4	2	7	4	Desk
JPT.43	Molded Cast	2	Rect	2	5	1	8	4	Desk
JPT.44	3 axis rectangular extrusion ?	4	Rect	3	5	4	**12**	4	Bench, Shelving Unit
JPT.45	3 axis rectangular extrusion	4	Rect	2	5	3	10	3	Shelving unit

Phase d: Scale Model Making

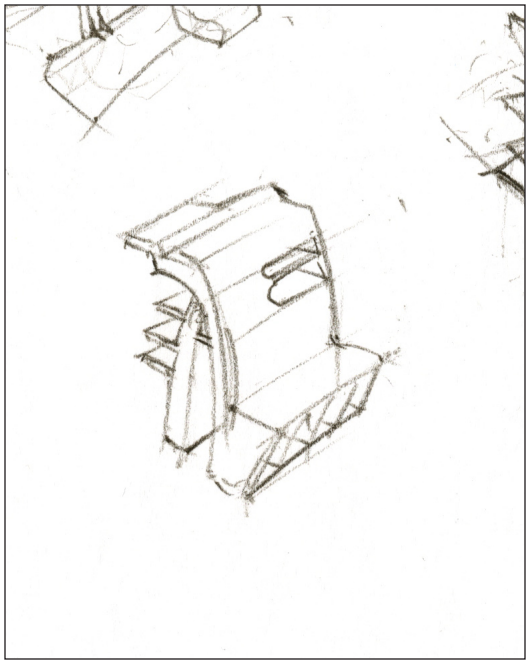

Figure 24: JPT.13–sketch used to create scale model

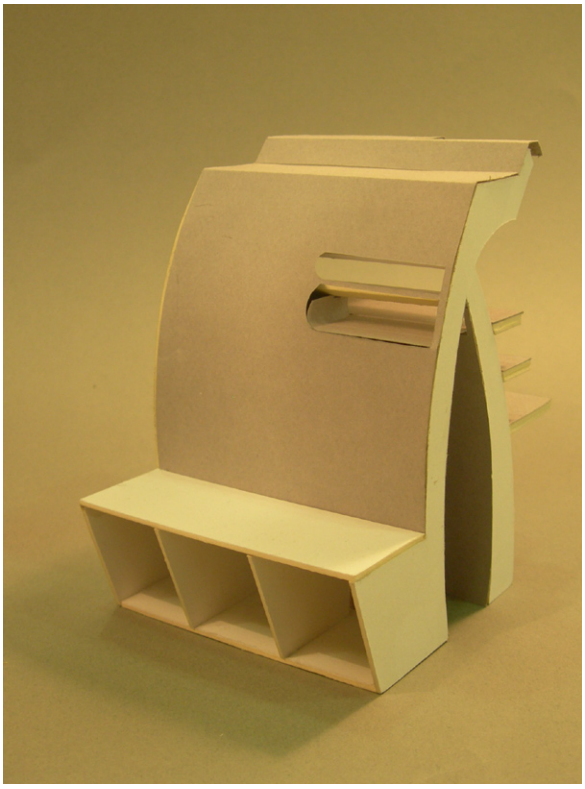

Figure 25: Phase d–scale model of JPT.13–view 1

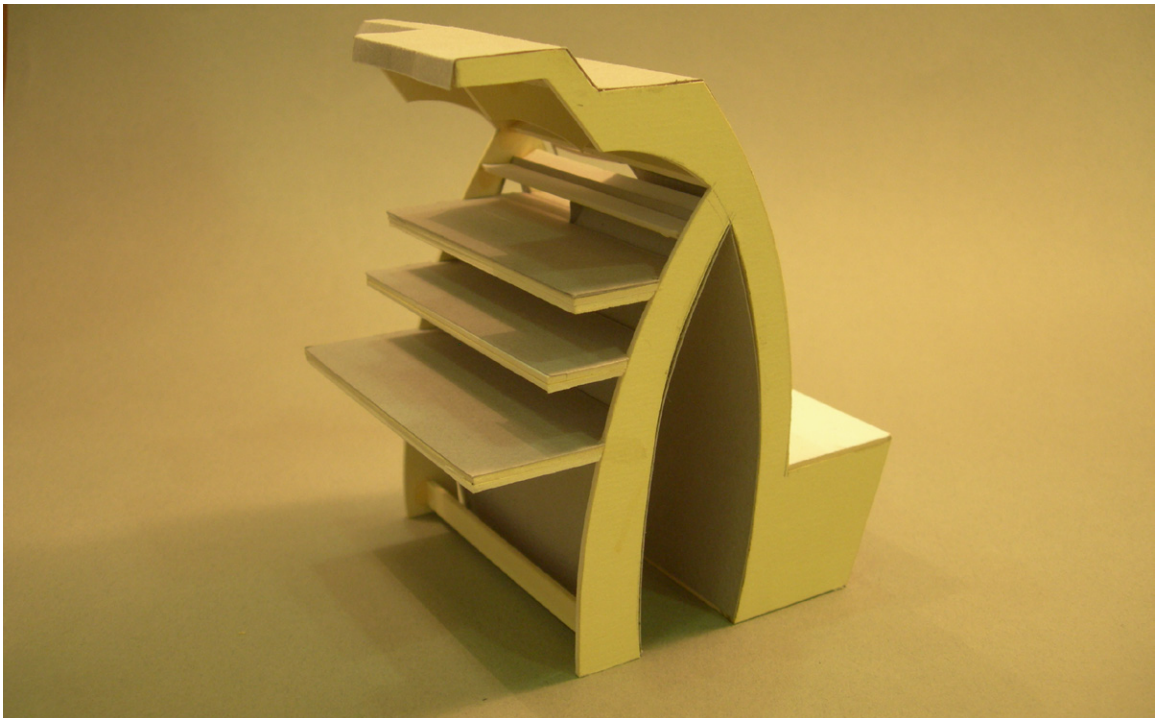

Figure 26: Phase d–scale model of JPT.13–view 2

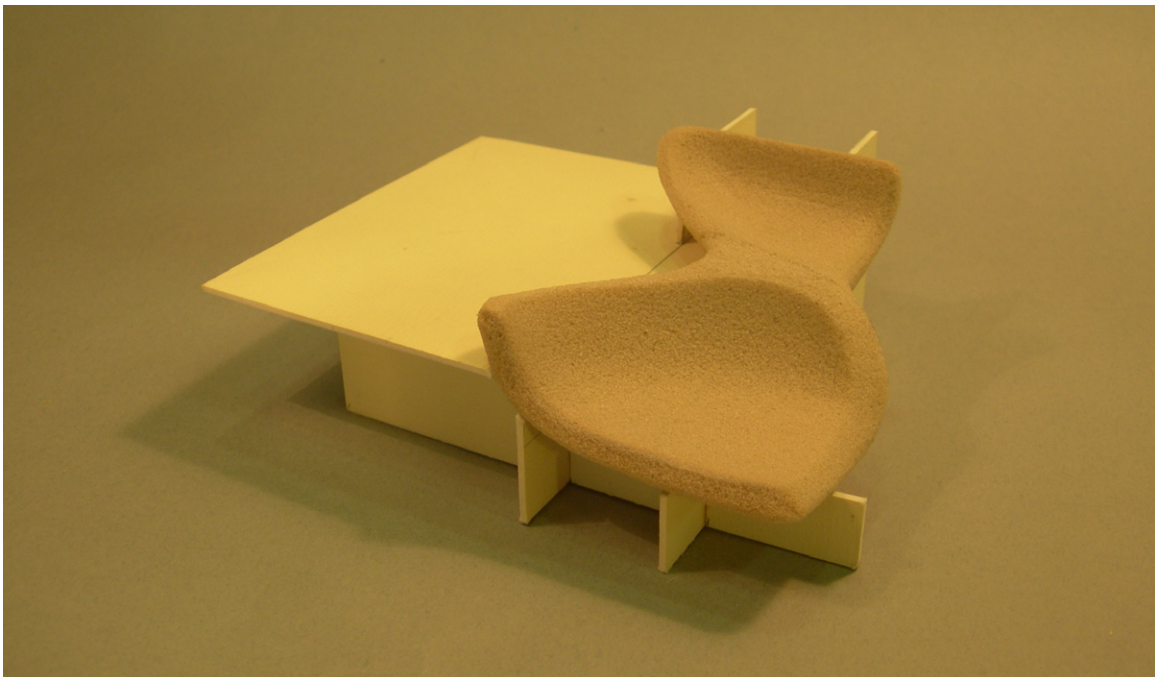

Figure 27: Phase d–scale model of JPT.21–view 1

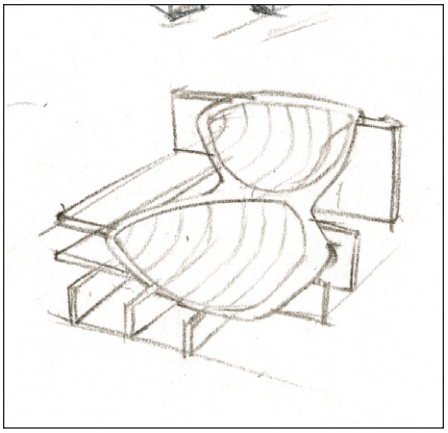

Figure 28: JPT.21–sketch used to create scale model

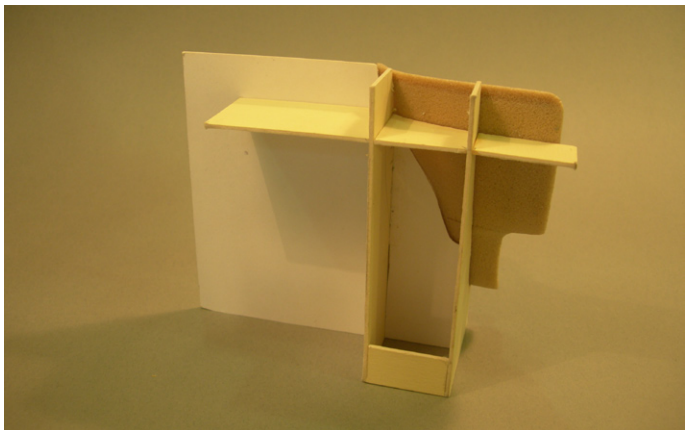

Figure 29: Phase d–scale model of JPT.21–view 2

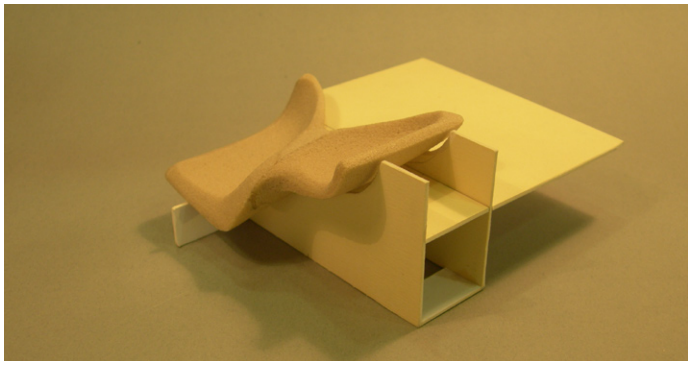

Figure 30: Phase d–scale model of JPT.21–view 3

Figure 31: JPT.36–sketch used to create scale model

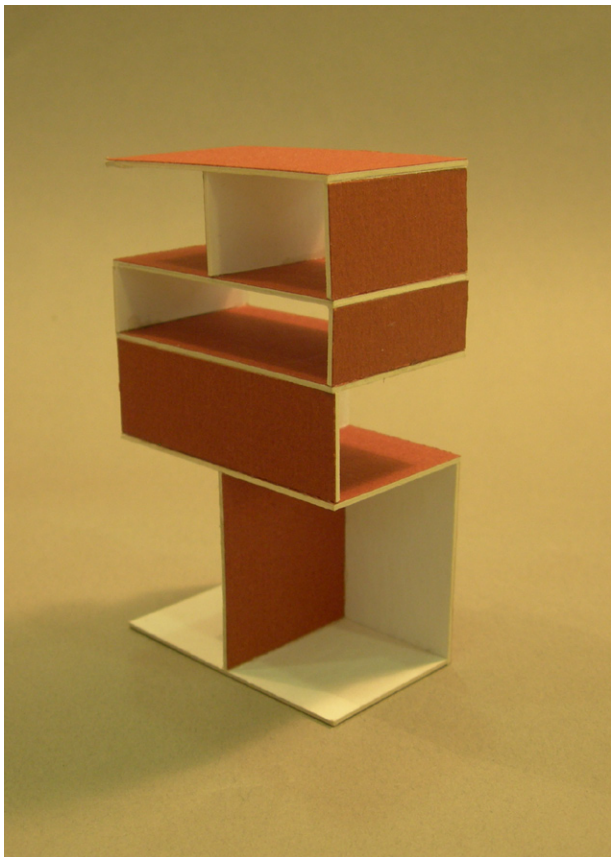

Figure 32: Phase d–scale model of JPT.36–view 1

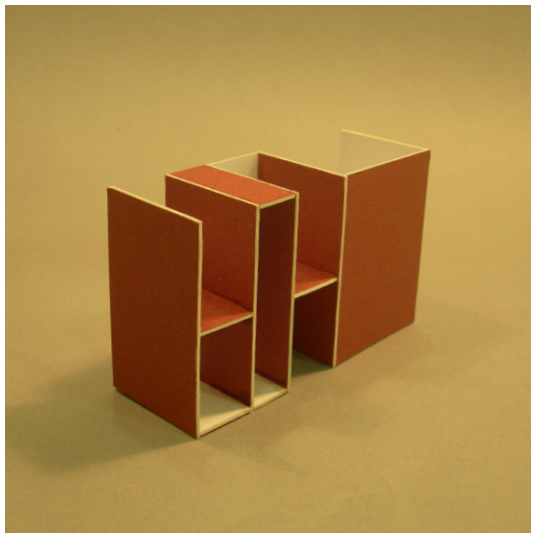

Figure 33: Phase d–scale model of JPT.36–view 2

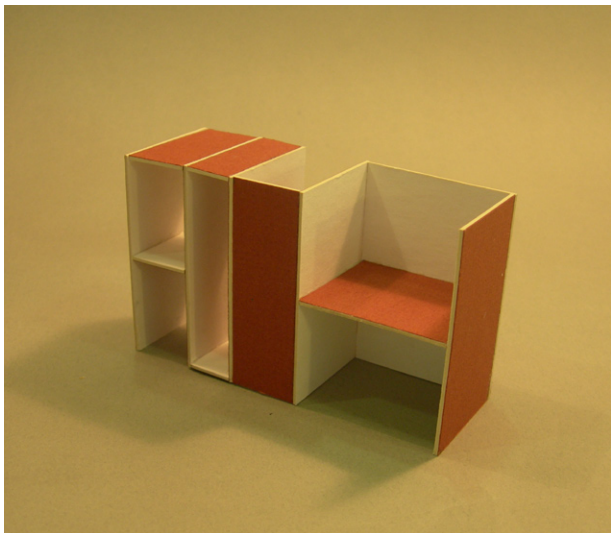

Figure 34: Phase d–scale model of JPT.36–view 3

Phase e: Sketching 2 and Scattered Refinement

Phase e entailed the refinement of the scale models (JPT.13, JPT. 21, and JPT.36) and the sporadic development of other ideas. Figures 35 through 47 are the most distinctive of the many pages of drawings produced during phase e. The remainder drawings are included in Appendix C.

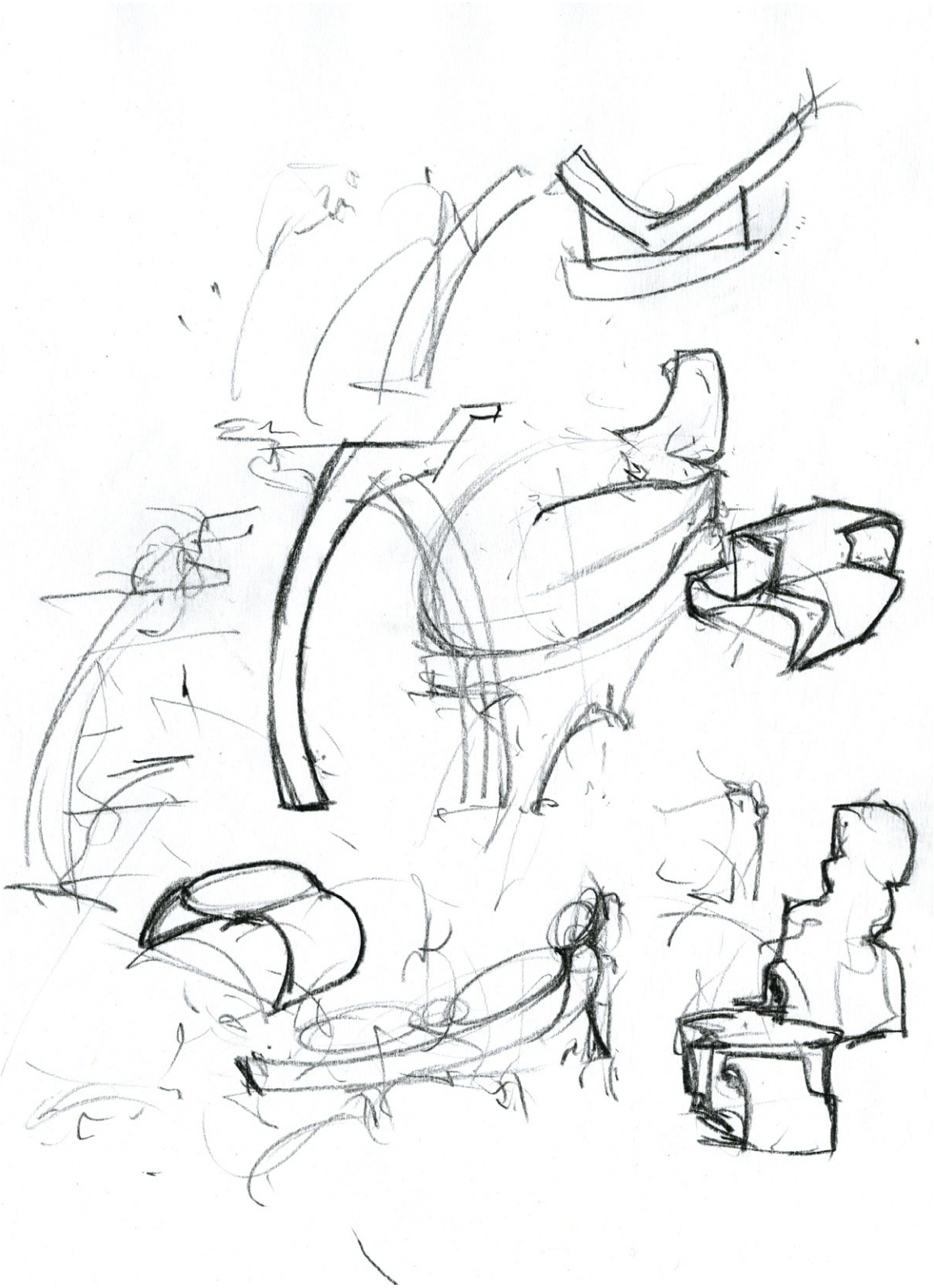

Figure 35: Phase e–sketch 1

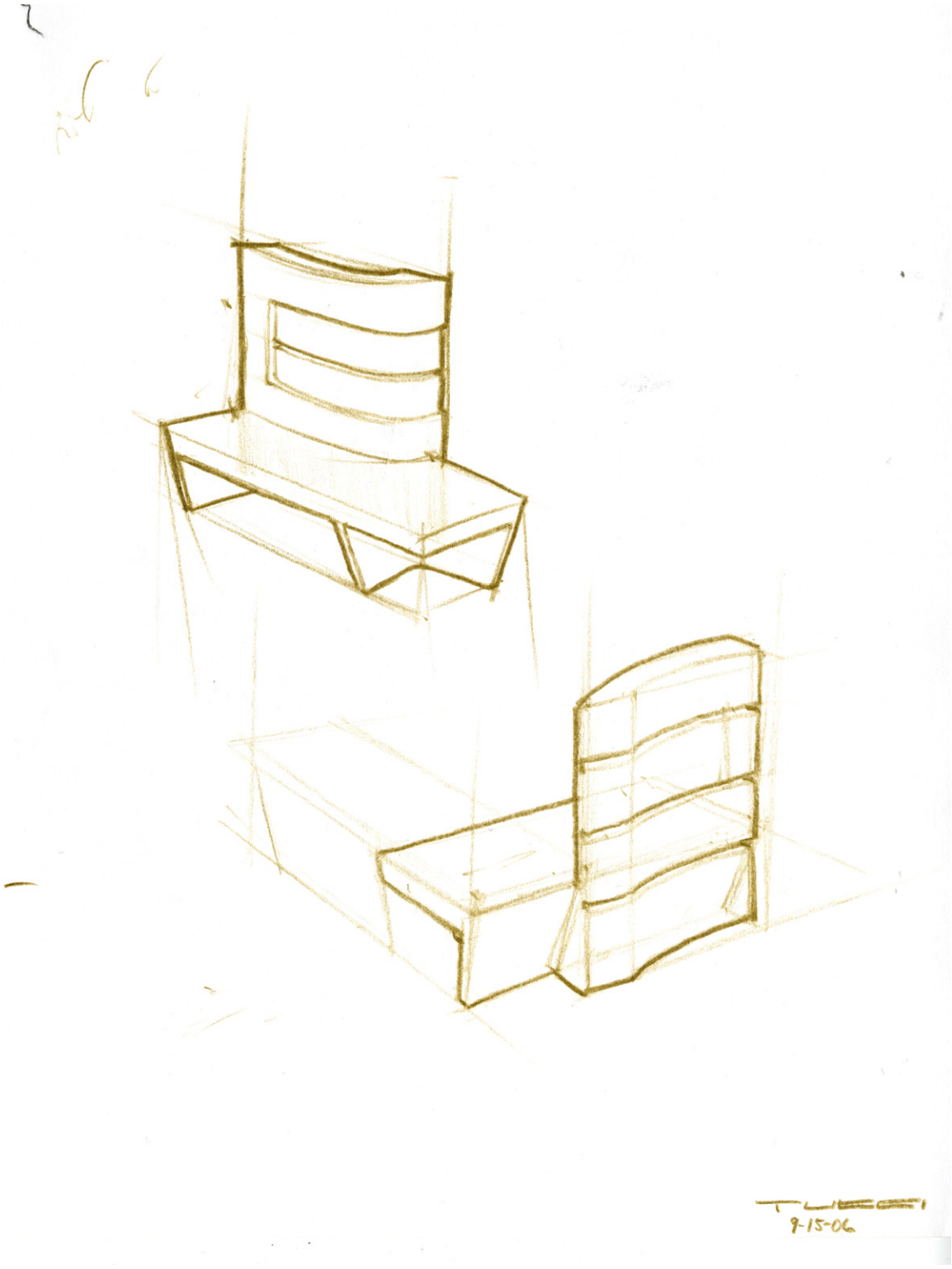

Figure 36: Phase e–sketch 2

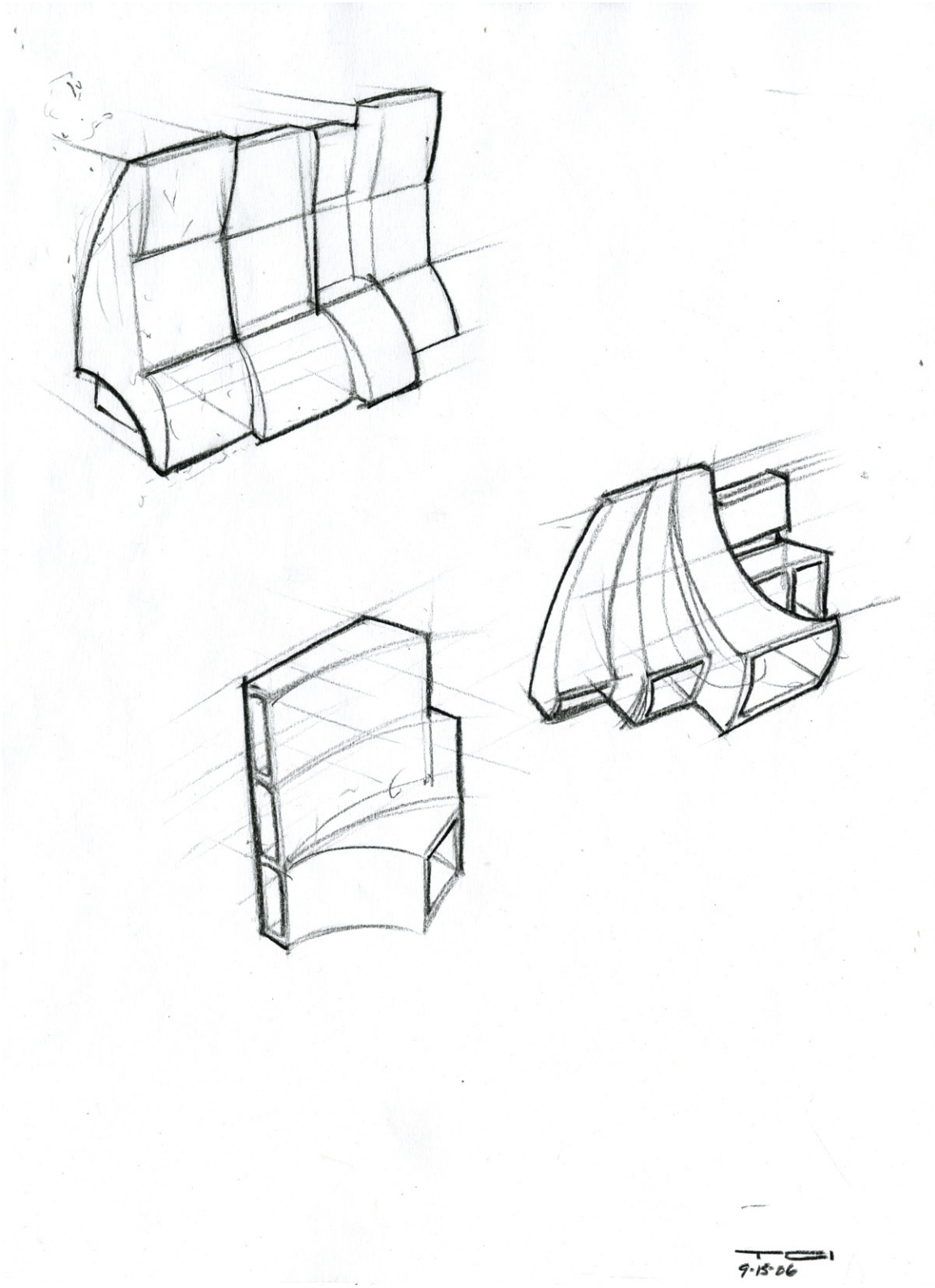

Figure 37: Phase e–sketch 3

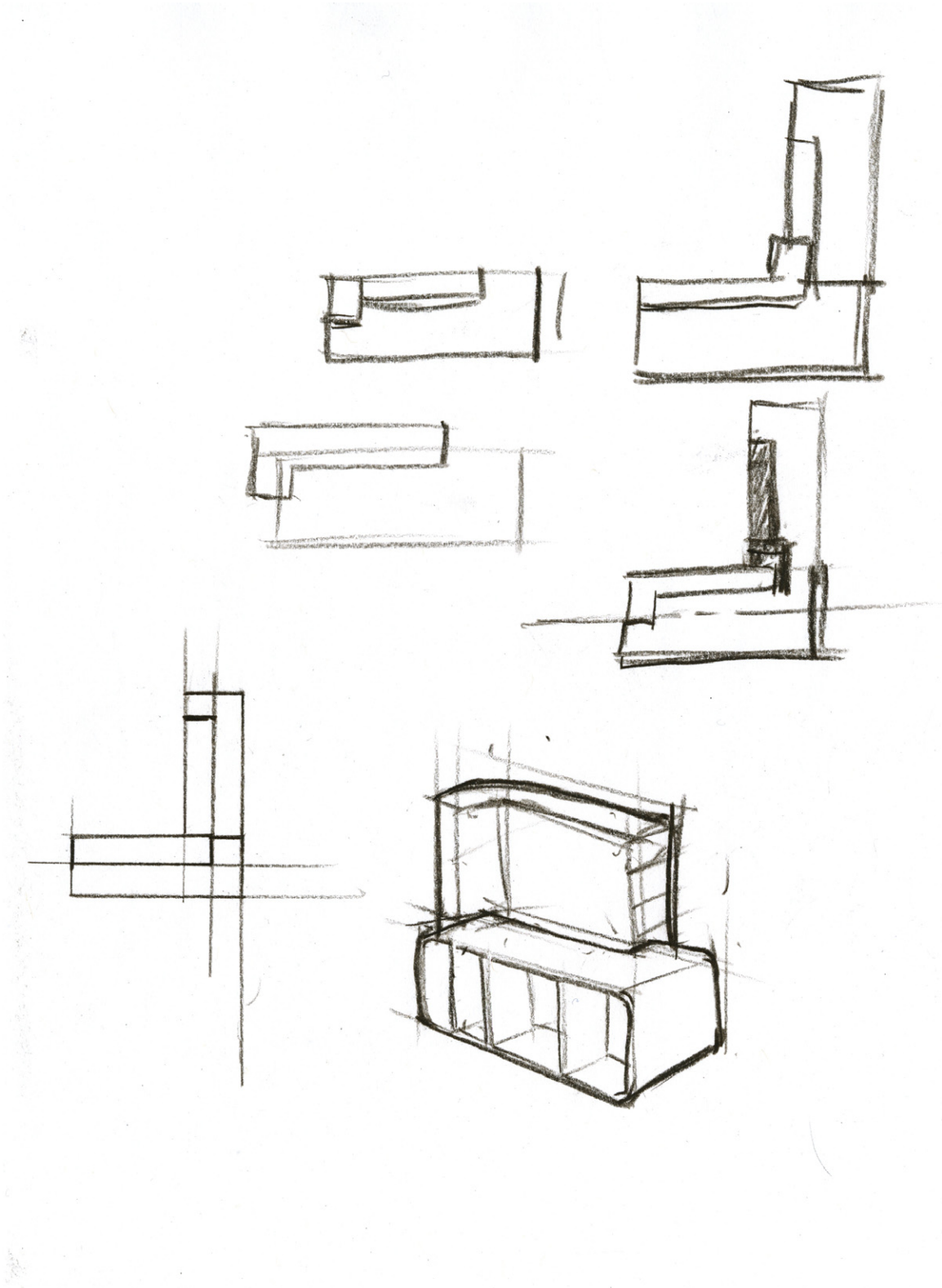

Figure 38: Phase e–sketch 4

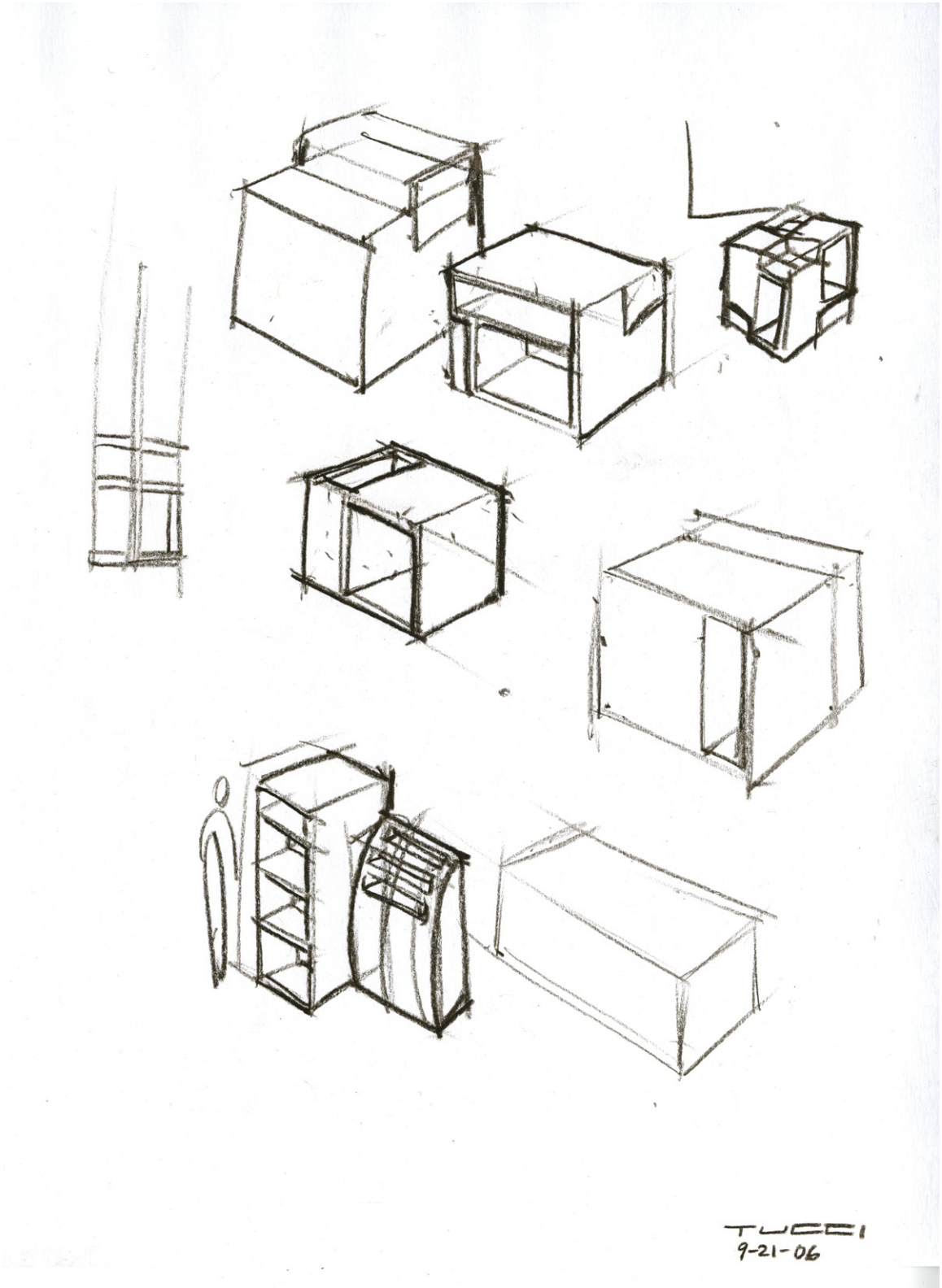

Figure 39: Phase e–sketch 5

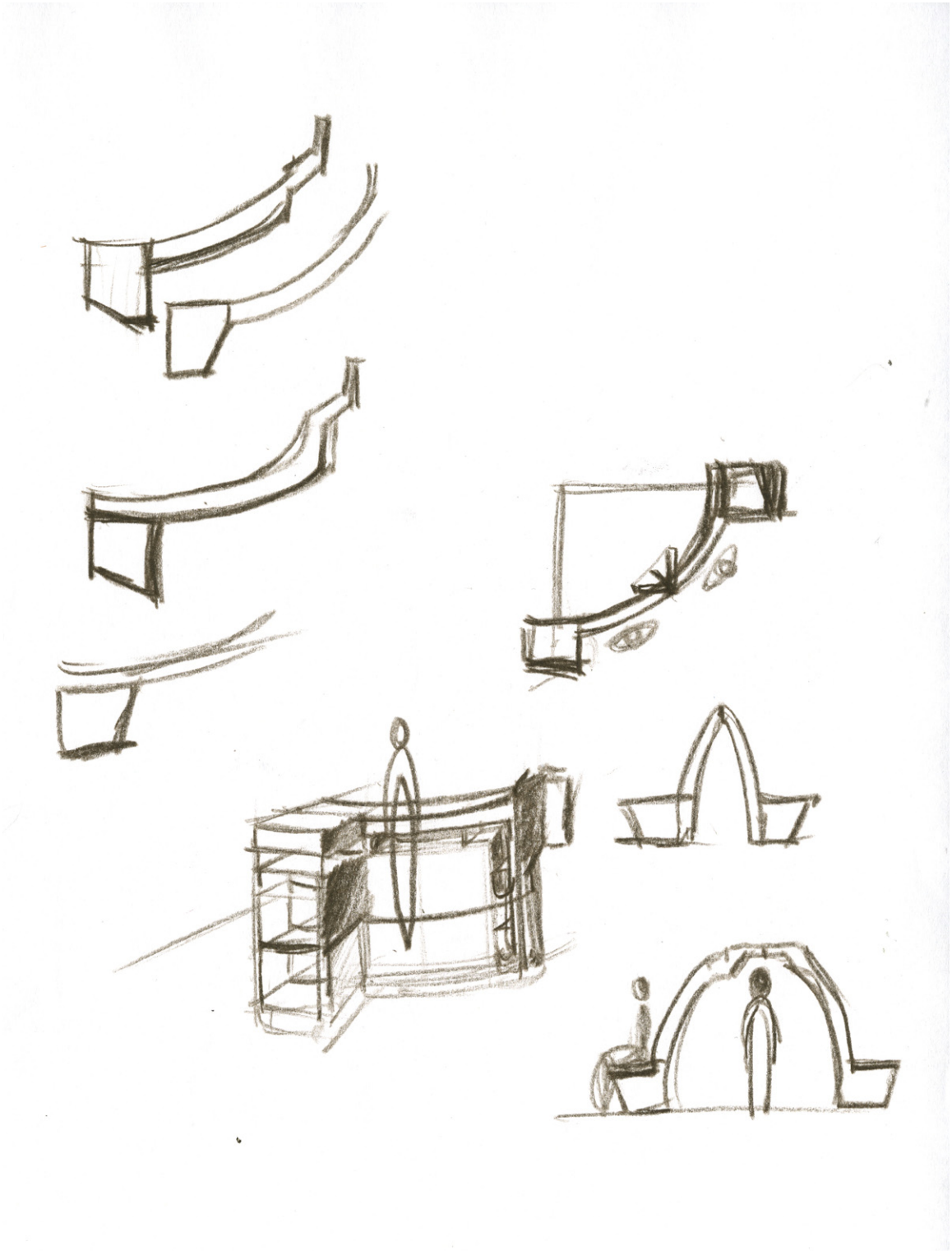

Figure 40: Phase e–sketch 6

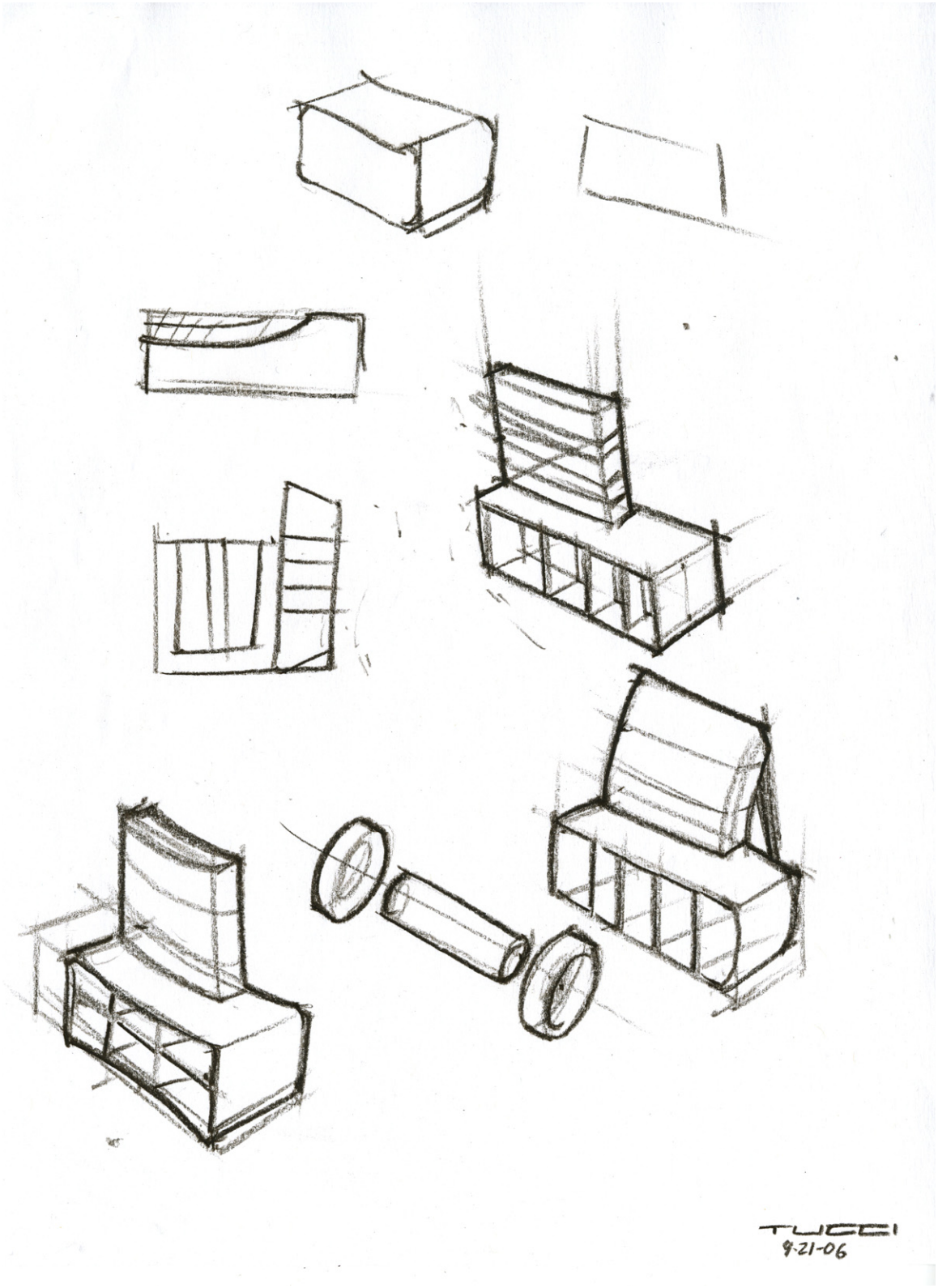

Figure 41: Phase e–sketch 7

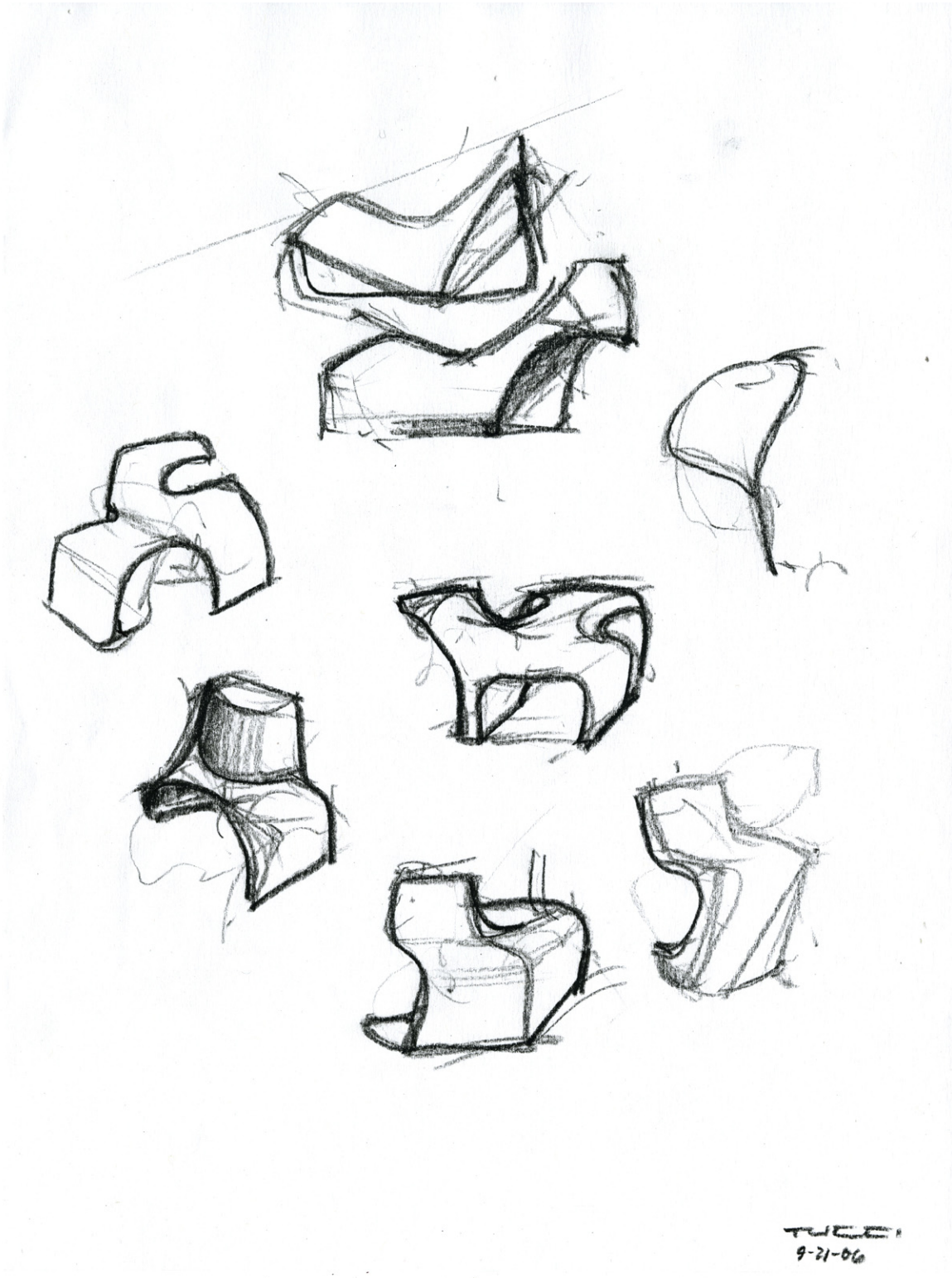

Figure 42: Phase e–sketch 8

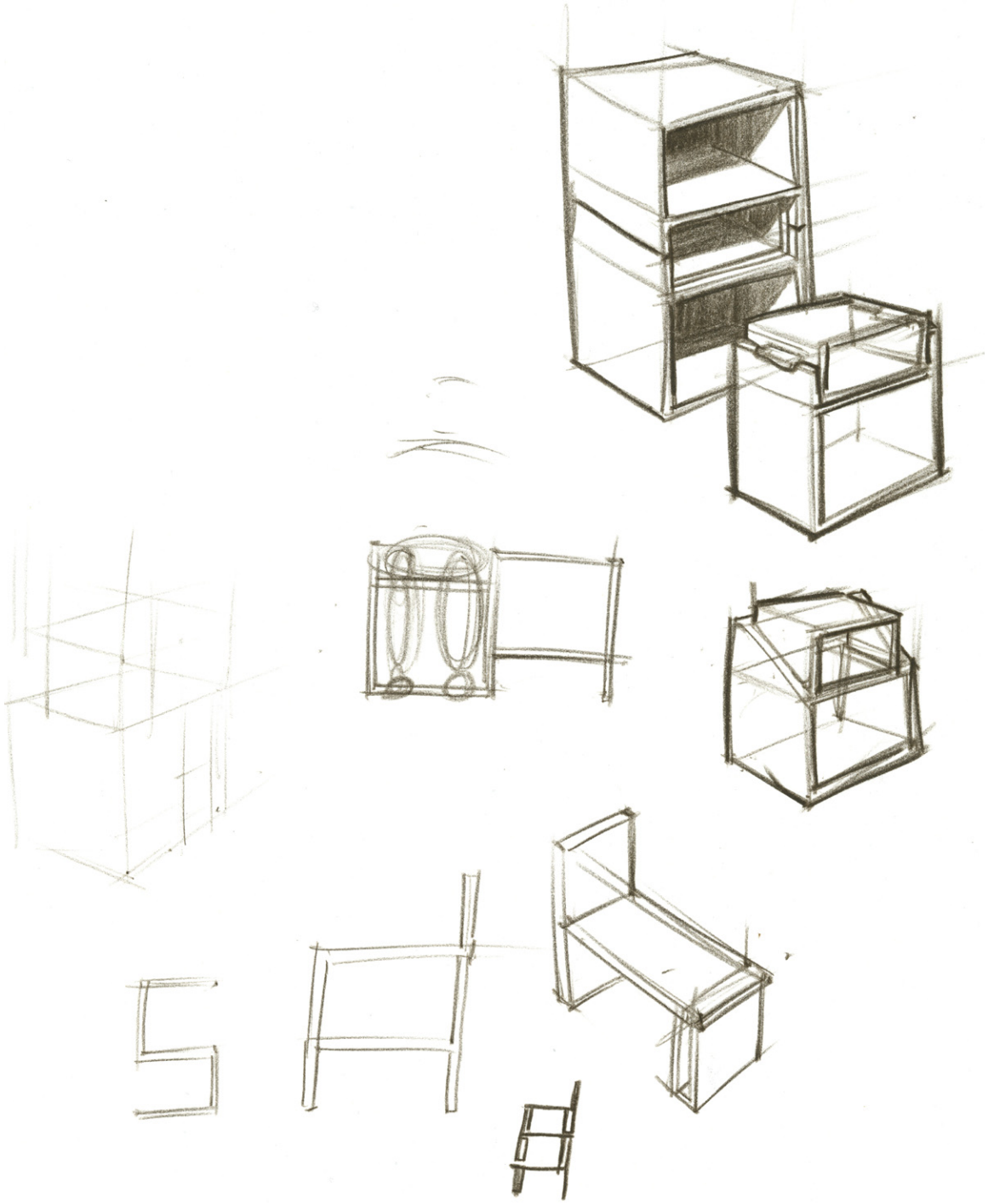

Figure 43: Phase e–sketch 9

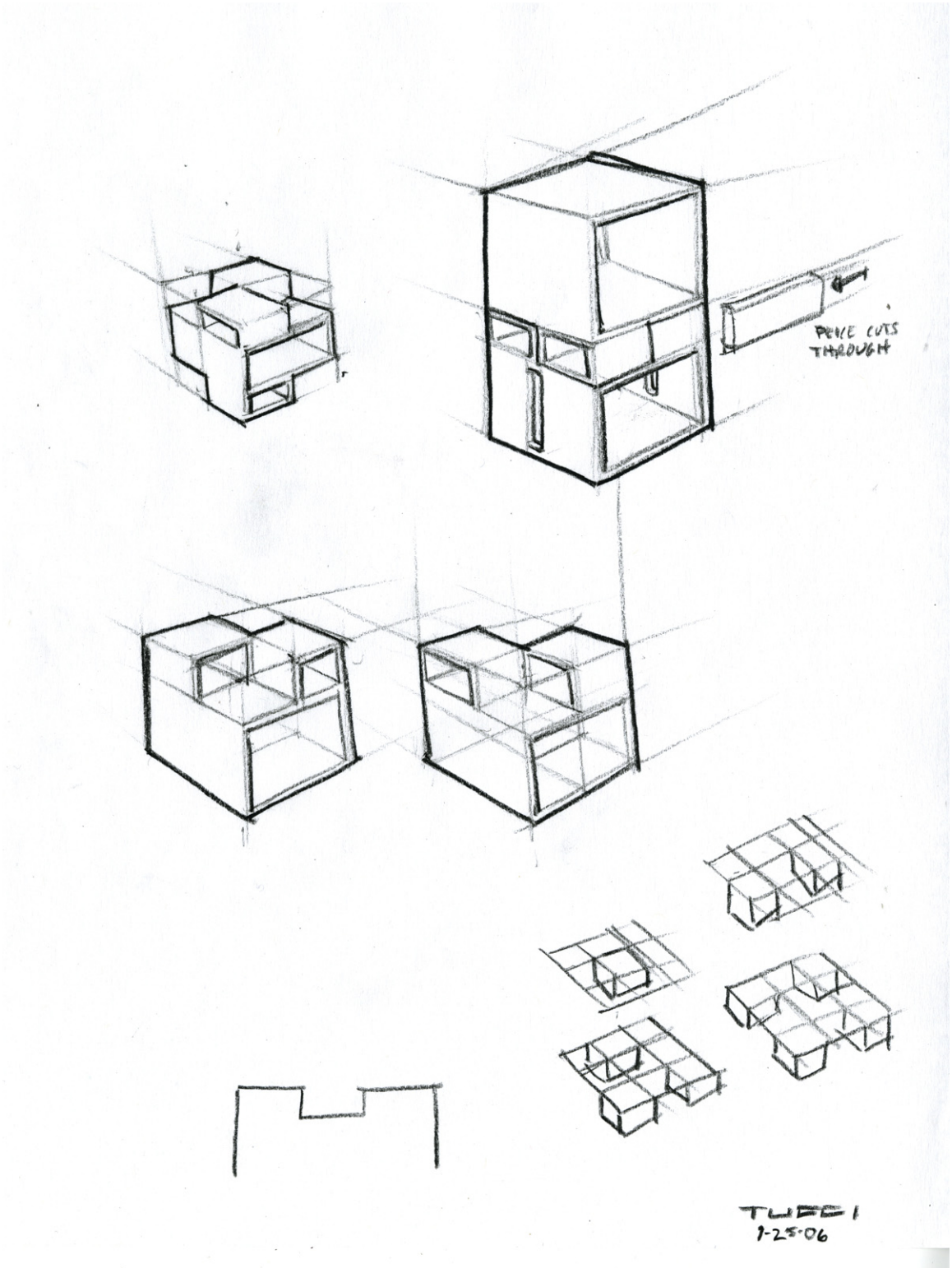

Figure 44: Phase e–sketch 10

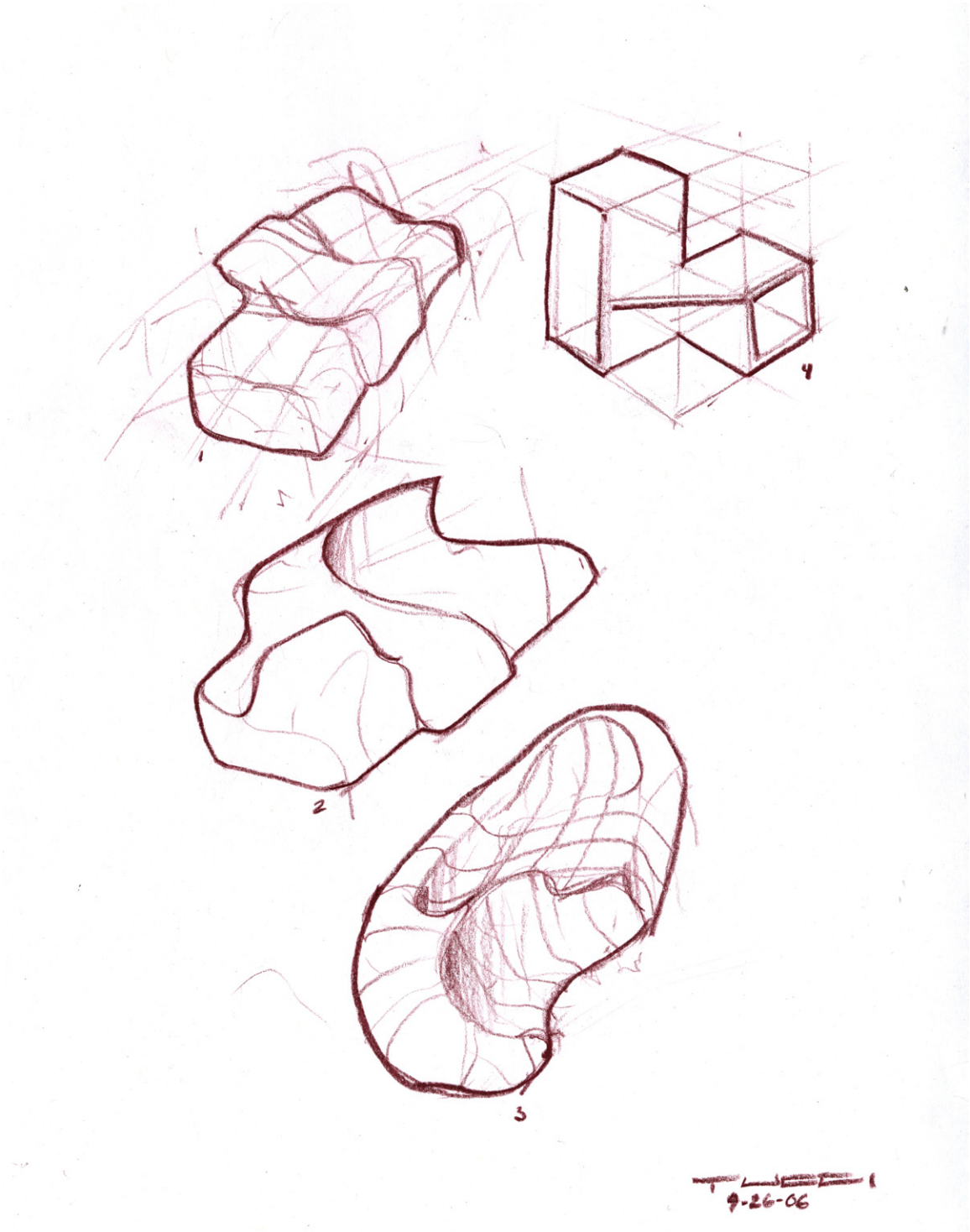

Figure 45: Phase e–sketch 11

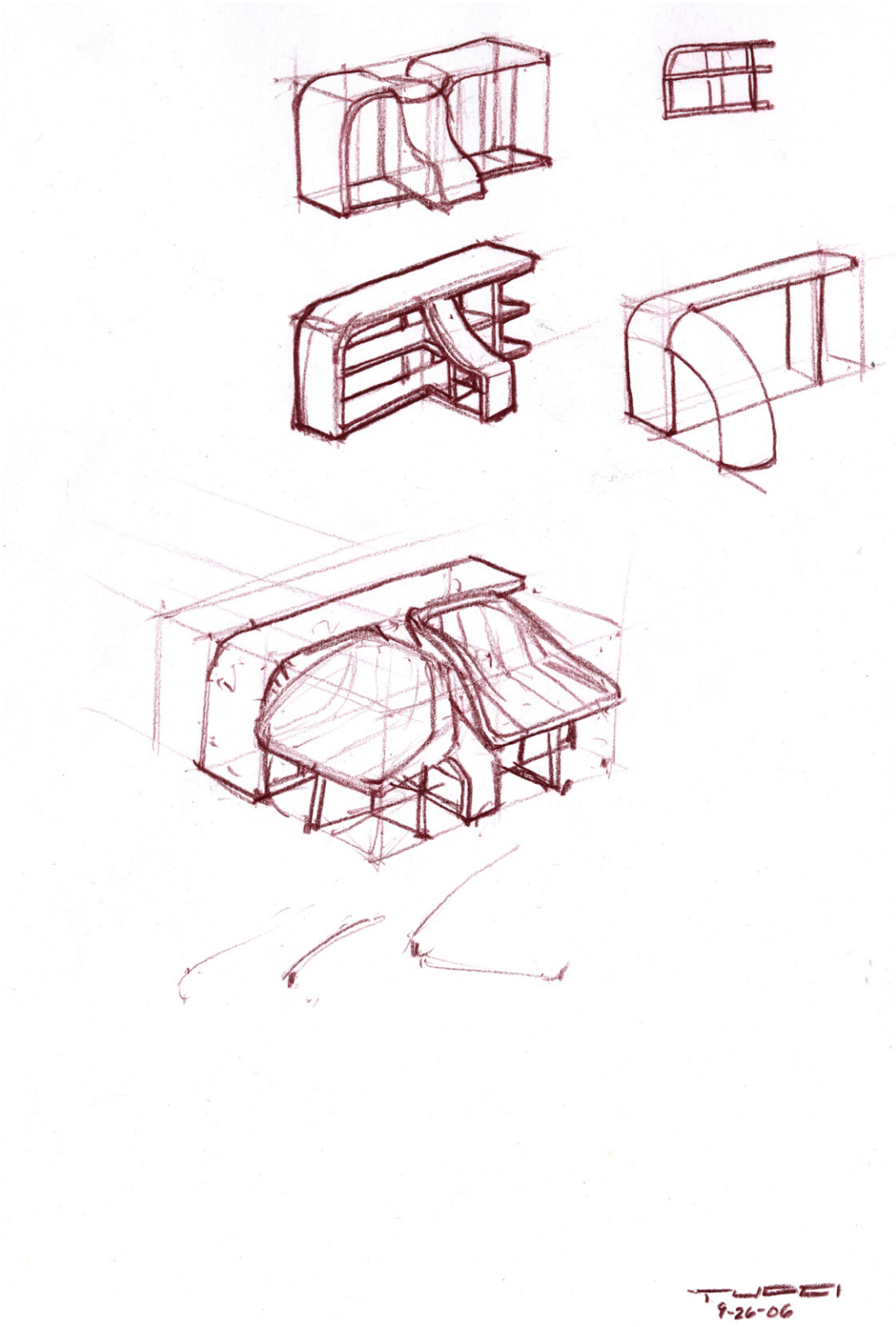

Figure 46: Phase e–sketch 12

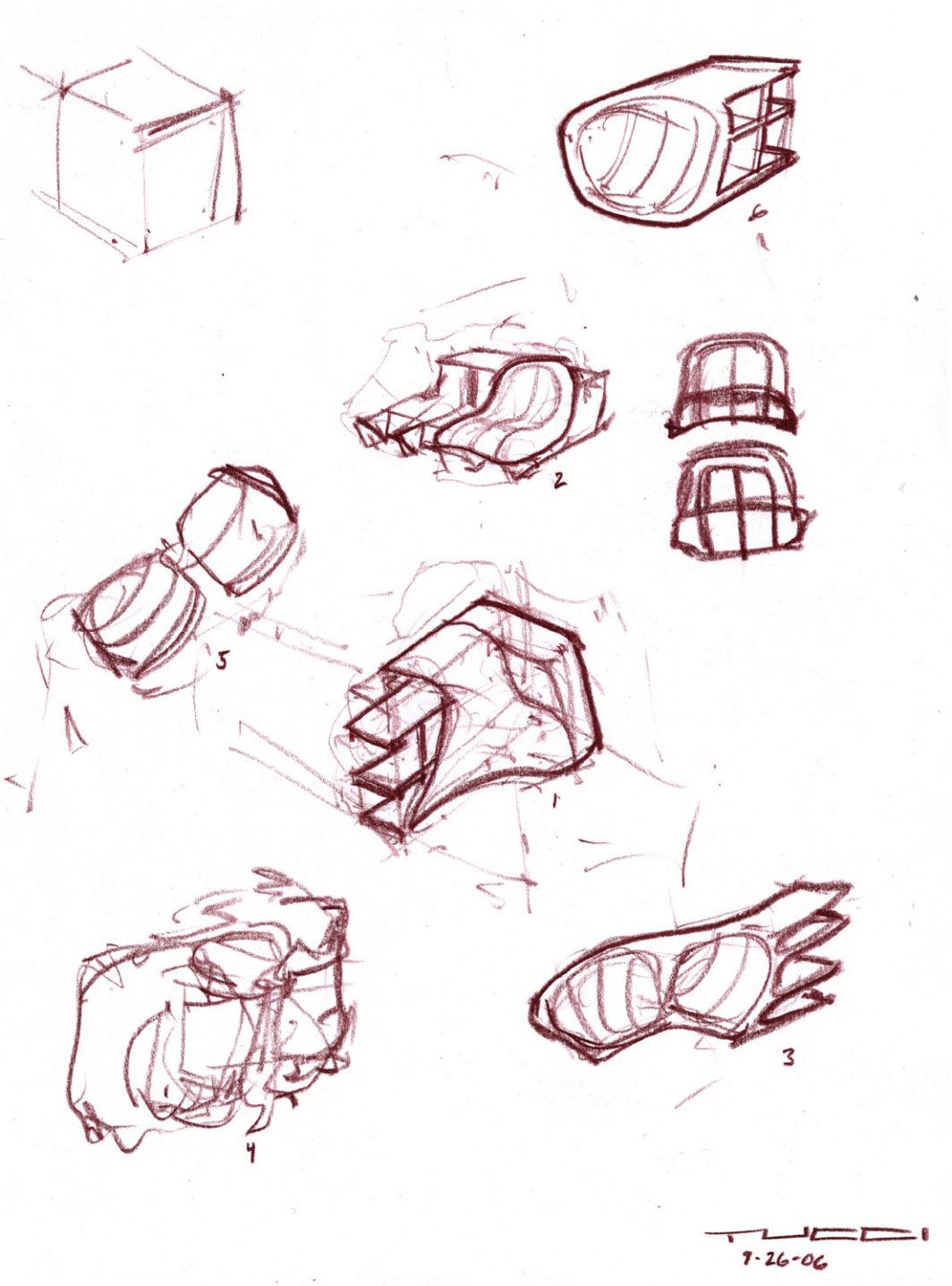

Figure 47: Phase e–sketch 13

Phase f: SketchUp Digital Models

Figures 48 through 54 include paper model variations of JPT.21. Figures 55 through 62 display the twenty-three SketchUp digital models. The digital models were constructed using true dimensions. Figure 55 and 56 show (from left to right) the progression of development. Chronologically based, the total models were divided into three groups. Figures 57 and 58 contain group 1, Figures 59 and 60 include group 2, and Figures 61 and 62 display the final set of ideas, group 3. The prototype was constructed from group 3.

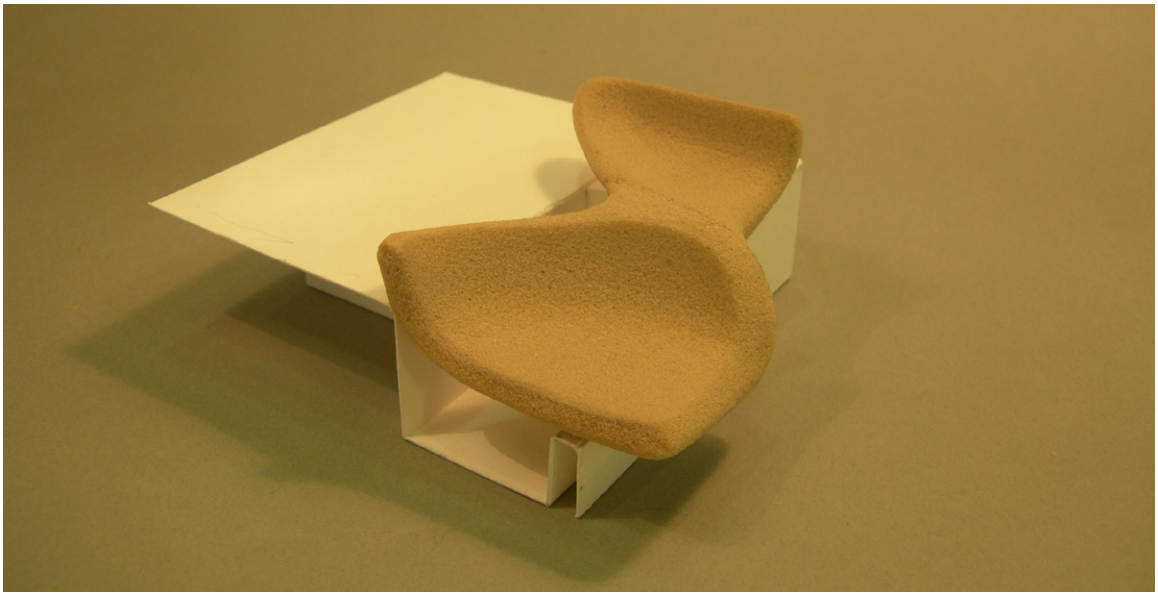

Figure 48: Phase f-scale model of JPT.21 variant 1–view 1

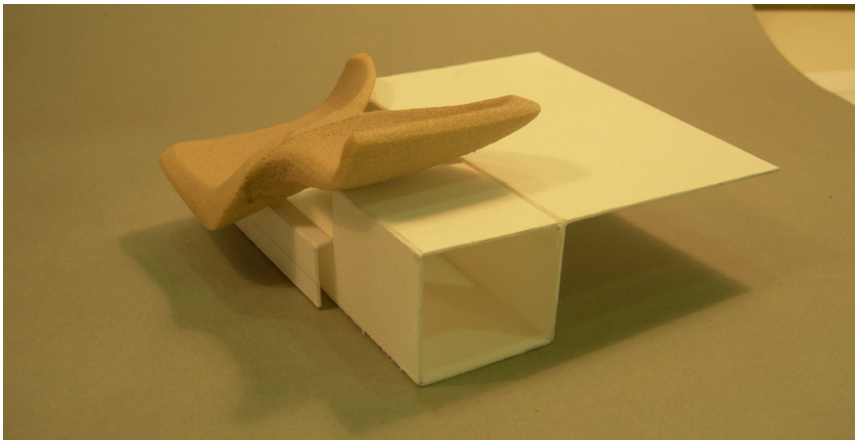

Figure 49: Phase f-scale model of JPT.21 variant 1–view 2

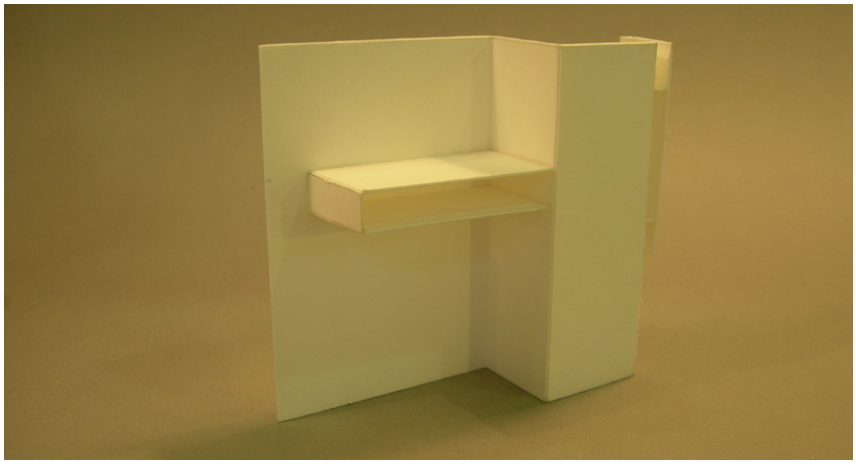

Figure 50: Phase f-scale model of JPT.21 variant 1–view 3

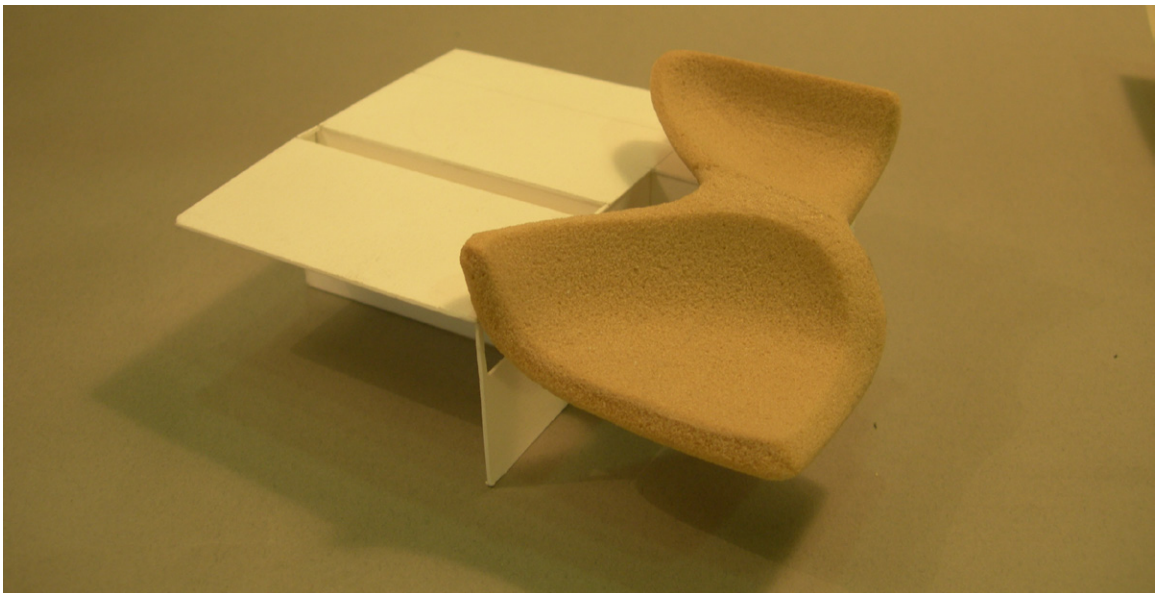

Figure 51: Phase f–scale model of JPT.21 variant 2–view 1

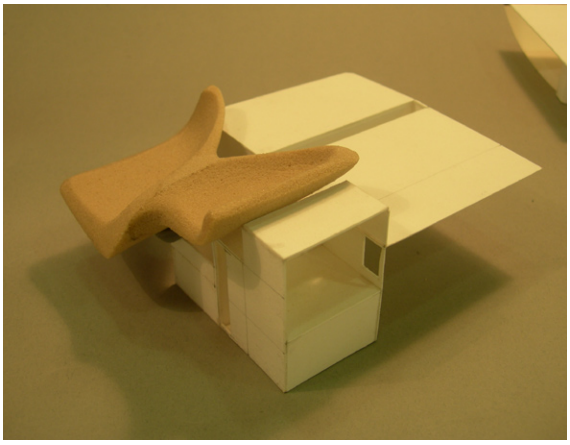

Figure 52: Phase f–scale model of JPT.21 variant 2–view 2

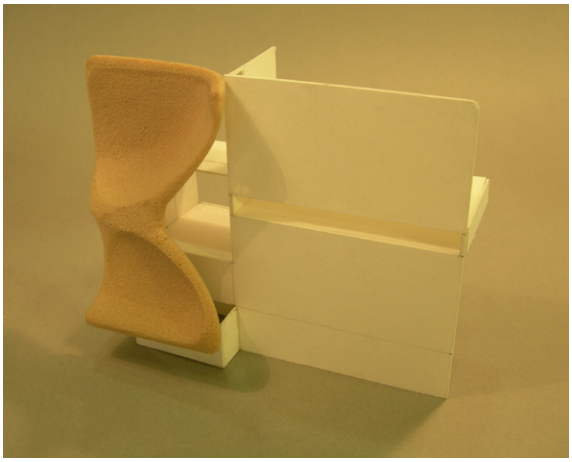

Figure 53: Phase f–scale model of JPT.21 variant 2–view 3

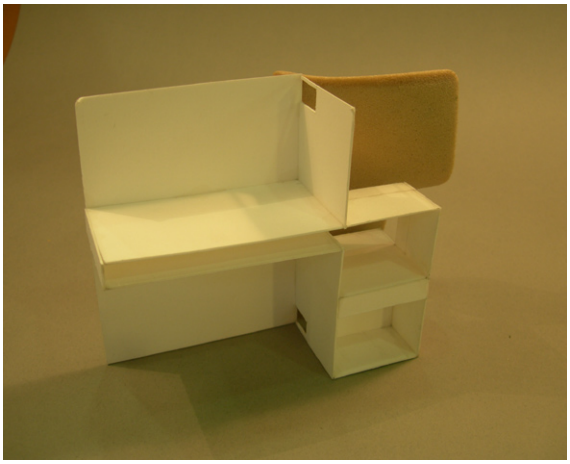

Figure 54: Phase f–scale model of JPT.21 variant 2–view 4

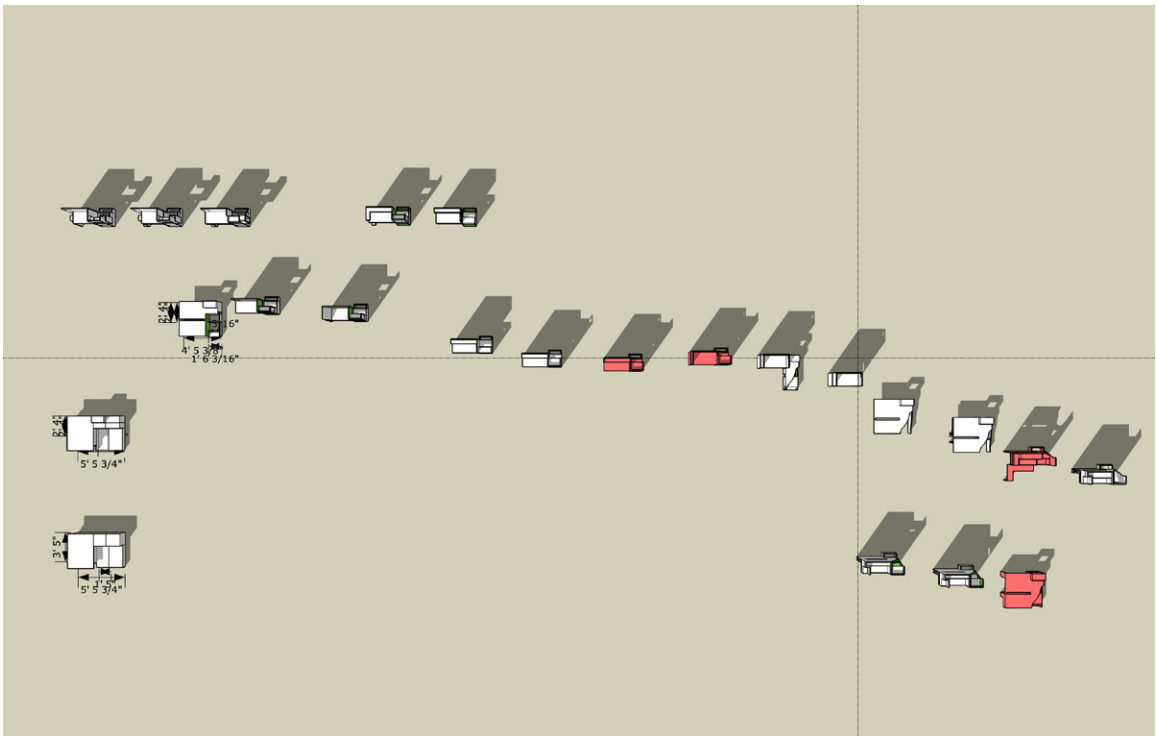

Figure 55: Phase f–all twenty-three SketchUp model variations of JPT.21–view 1

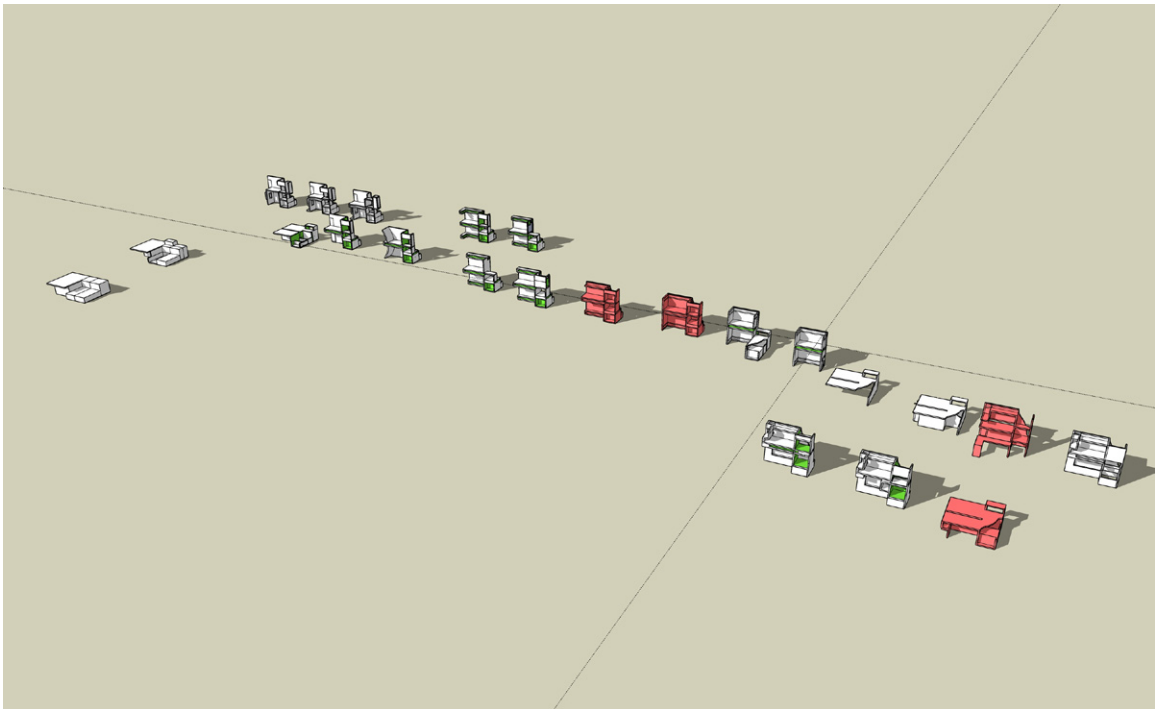

Figure 56: Phase f–all twenty-three SketchUp model variations of JPT.21–view 2

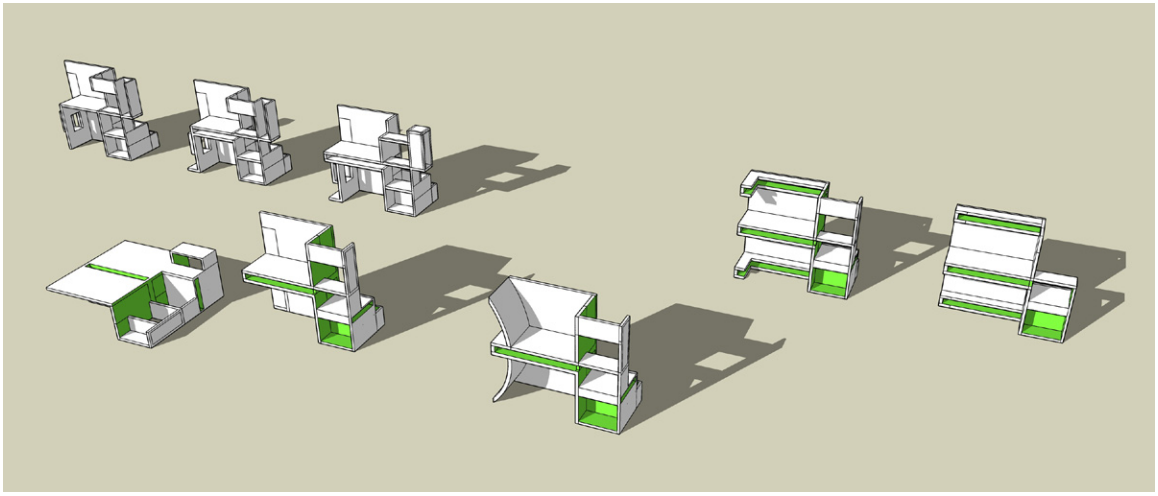

Figure 57: Phase f–group 1–view 1

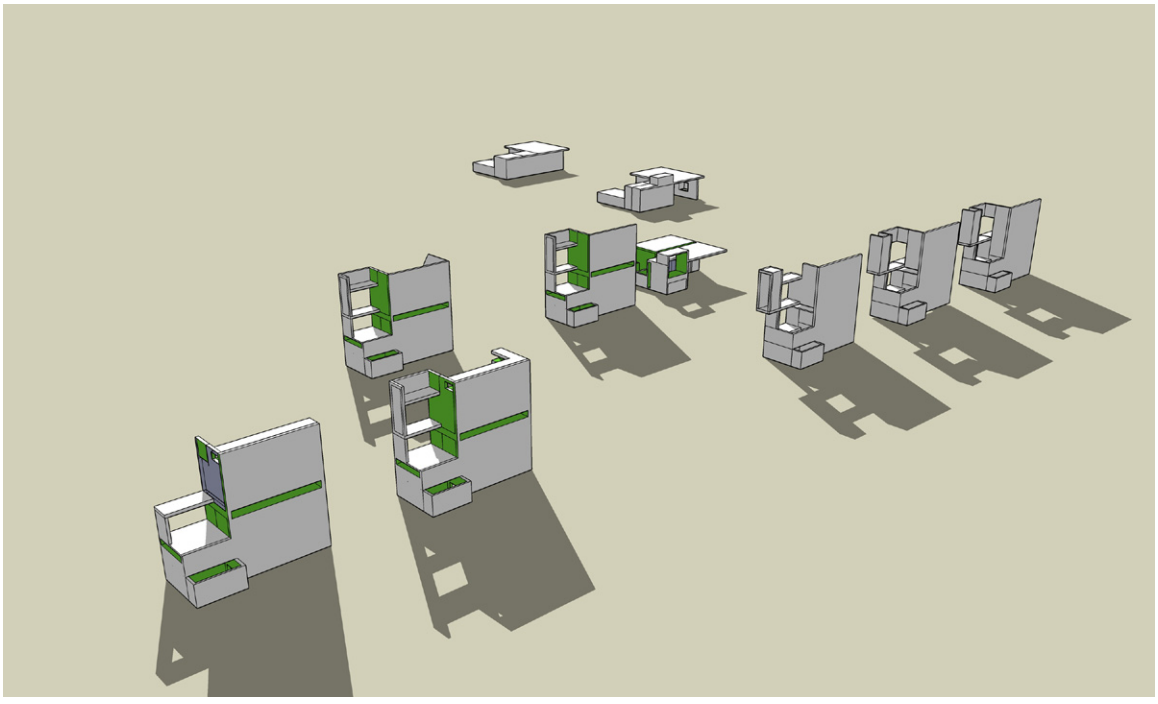

Figure 58: Phase f–group 1–view 2

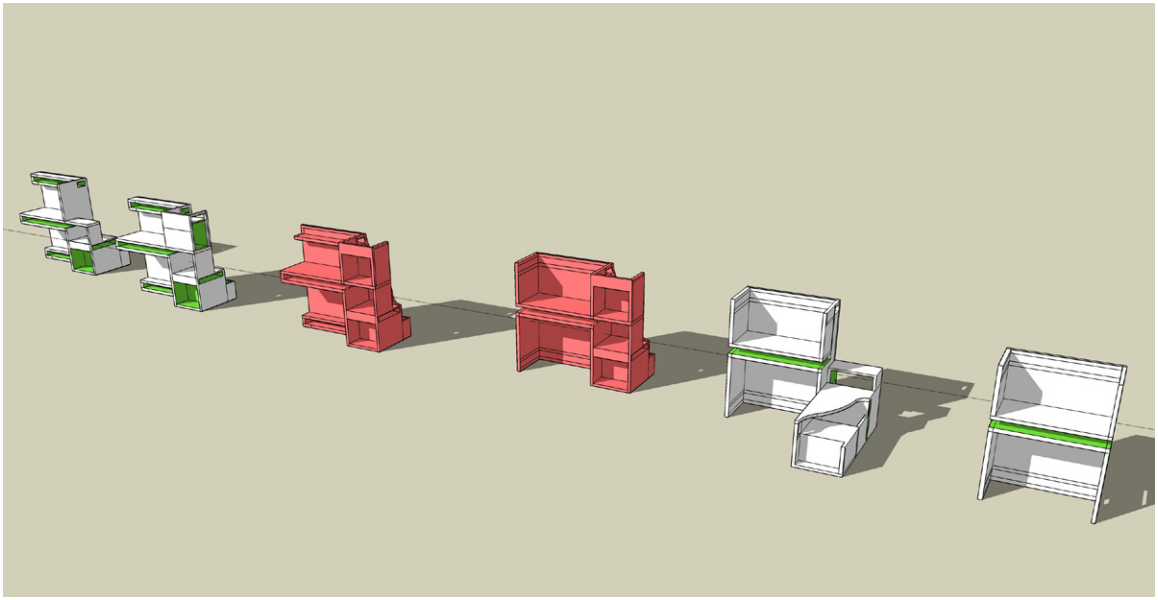

Figure 59: Phase f–group 2–view 1

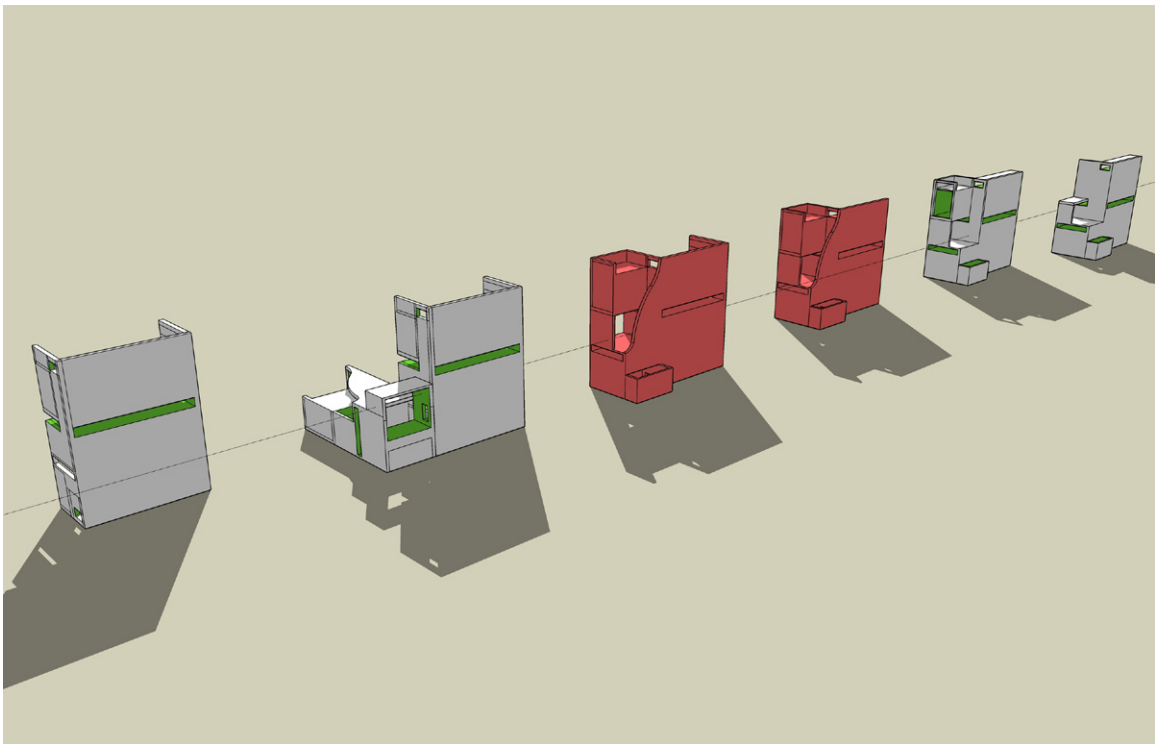

Figure 60: Phase f–group 2–view 2

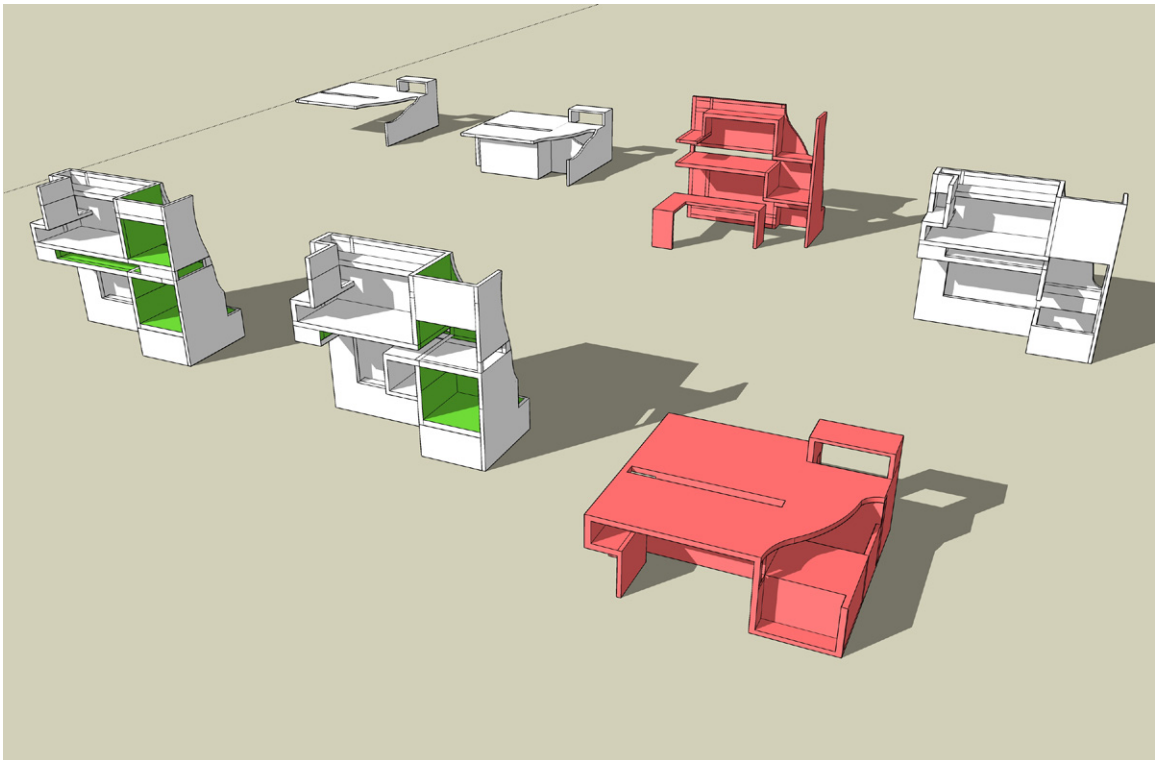

Figure 61: Phase f–group 3–view 1

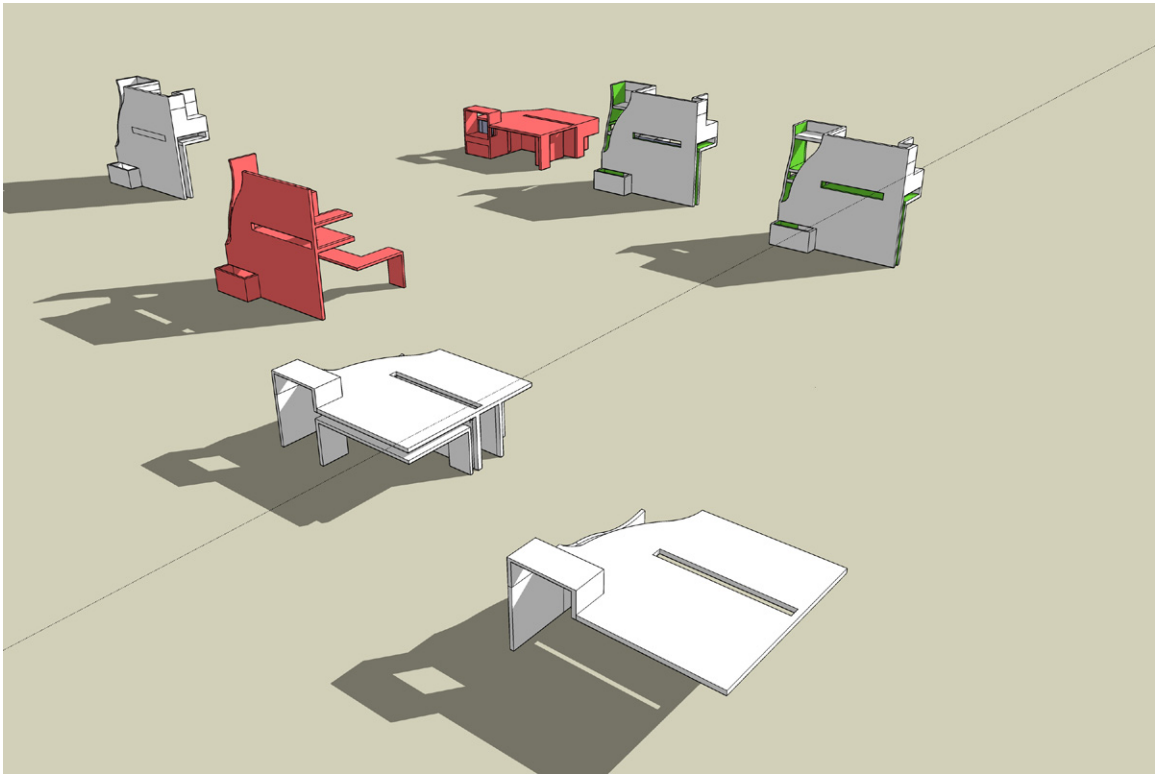

Figure 62: Phase f–group 3–view 2

Phase g: Prototype Construction

Figure 63: Phase g–two views of rough prototype under construction

Figure 64: Phase g–four views of rough prototype

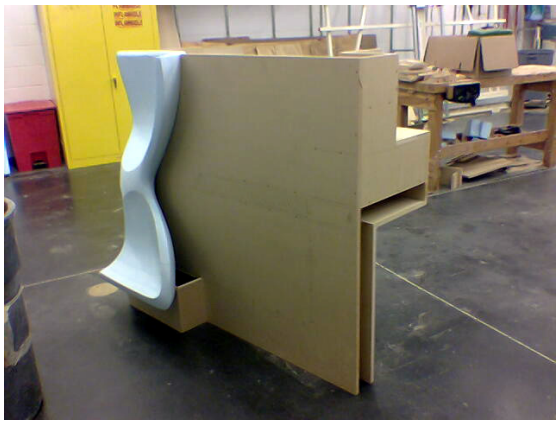

Figure 65: Phase g–three views of rough prototype in vertical orientation

Figure 66: Phase g–view of prototype with slit

Figure 67: Phase g–second view of prototype with slit

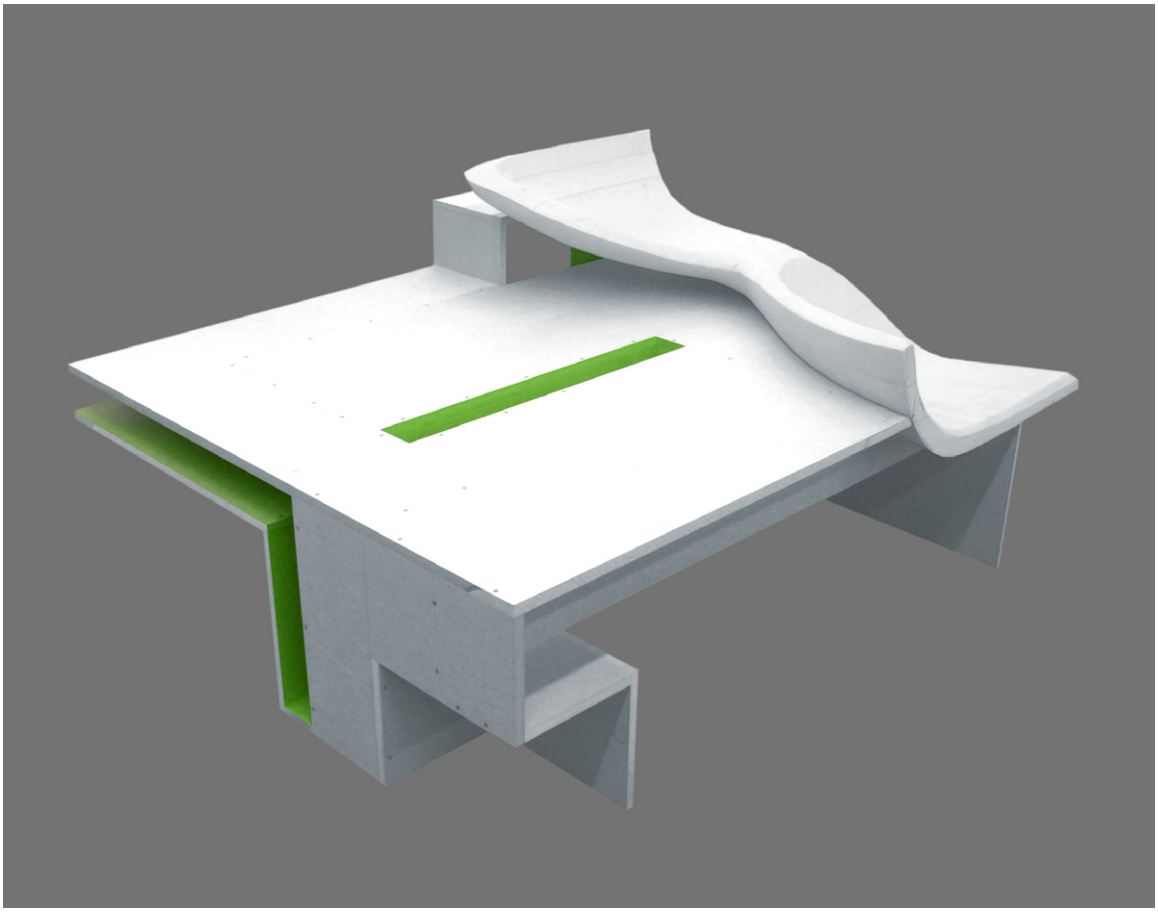

Figure 68: Phase g–refined prototype

CHAPTER V

CONCLUSION

Despecialization Status

The final outcome of this design investigation, the prototype variant of JPT.21, achieves, on some level, despecialization status. JPT.21 succeeds in functioning as a spacer, worker, and comforter without conventionally representing a known furniture type. In its horizontal position, JPT.21 acts primarily as a comforter. The curvilinear form offers varied seating positions, while the flat horizontal surface acts as a low table or even additional seating. In the upright position, indicated in figure 66, JPT.21 acts as a worker, offering a work surface and shelving for storage. While in any of the vertical positions, the tall narrow shape allows the prototype to perform as a spacer, dividing space and when in the horizontal position it performs as spacer combining space. The low height and available seating in the horizontal orientation offers the potential of creating communal space by enabling multiple users to sit at once. Also, there is no intended position for storage. When JPT.21 is placed in any orientation the ribbon form of the geometric base still affords storage opportunities. There is no doubt that JPT.21 is not specialized.

There is no way to predict whether or not the same outcome would have been achieved if the serendipitous approach had not been used. But it can be said that final physical outcome was not envisioned at the beginning of the process.

Benefits and Challenges Using the Serendipitous Generative Approach

During this design investigation, the serendipitous generative process produced both opportunities and challenges. The generation of a wide variety of unique "unexpected" ideas was advantageous. However, the broad spectrum of ideas created, the ambiguity of when and how to

use the qualifiers, and the inescapability of "intent" presented challenges to reaching a final design outcome.

The challenge for most designers is to create something that has not been seen or done before. This may be the hardest challenge they face. The lifetime of experiences, education and interests have direct and indirect influences on their work. Since their experience is based on previous work and they use their experience to guide them in future work, it becomes quite challenging to create something "new". This condition also subsists when creating furniture that is despecialized, because one of the goals is making it appear unfamiliar. This requires a removal of one's self from their own expectations. The serendipitous approach promoted "removal" during the design investigation. The challenge at the outset was refraining from immediately creating functional objects. In order to suspend functional expectations, the drawings were done with eyes closed. These blind drawings visually disconnected the mind from the drawing process, which in turn, promoted a temporary disconnect with idiosyncratic expectation. Eventually, an expectation disconnect could be achieved without having to disconnect visually. This process to suspend functional and formal expectations helped achieve a number of unique, unexpected ideas; including the final outcome of JPT.21. The uniqueness was assessed by peer evaluation and from faculty professionals. The potential for uniqueness not only allows for a noteworthy outcome but also for a despecialized outcome.

Moreover, a secondary advantage to using the serendipitous approach is the large volume of ideas generated, documented in the Results chapter. In most cases, the larger the number of ideas, the greater the chances are of discovering a noteworthy idea. Consequently, a lesser volume increases the likeliness for having a weak outcome. These are general statements, which the next paragraph fleshes out. Since the serendipitous process has limited specific functional expectations driving it, ideas can be generated faster, in large volume and in wide variety;

allowing for an opportunity to select from more promising ideas. The more promising ideas to choose from, the more likely a desirable outcome will emerge.

The advantage of volume also presents a potential disadvantage. During this investigation, the large volume and vast variety of ideas became so broad that it became challenging to maintain focus, narrow down results, and achieve the desirable level of detail for any particular idea. When the end goal is to create one product, hundreds of ideas, varying drastically in form, can generate a loss of focus and draw the process out longer than necessary. During the investigation, the challenge with the large volume of ideas presented itself after phase b. At this point a qualifier matrix was used to narrow down the field of ideas. Nonetheless, the problem of volume arose again during phase e. Phase e involved expounding on and refining three ideas selected using the matrix (JPT.13, JPT.21 and JPT.36). In an attempt to produce more ideas from the chosen three, and afford the opportunity to create the "perfect" despecialized object, many more ideas emerged. In fact, much of the exploration arched back to earlier ideas. Twenty-five pages of drawings were created during phase e. Only about half were variations of the three. In retrospect, this seemed futile. According to the notes from 9.19.2006 (see page 108). JPT.21 was still the one idea that seemed most promising. There was a loss of focus with many of the ideas generated that were not reflected in the final outcome. It is hard to say if the meandering paths taken during phase e were necessary, because there is no way to forecast an alternate outcome. The meandering path is clearly a by-product of this method.

Another challenge with this method is the lack of determinant time or way to utilize the qualifiers. Because the serendipitous approach relies on qualifiers to filter ideas and refine them, it becomes necessary to fold-in. The problem is hermeneutical and relies on the judgment of the designer to determine how and when to use the qualifiers. In this investigation, there was no predetermined point at which qualifiers were implanted. In fact, the qualifiers were devised, not

prior, but rather in and effort to re-focus the investigation. The general guideline was to apply the qualifiers when a large enough volume of varying ideas was produced in order to rein in certain forms that would not meet ergonomics and dimensional standards. When faced with a hundred possibilities, it seemed appropriate to use the qualifiers to refine individual ideas, and filter out the potentially functional ones. Thus two stages of filtering, using the qualifiers, came about: a reducing stage and a refinement stage. The reducing stage sought to narrow down the number of ideas, while the refinement involved improving individual ideas. In this case, a matrix and coding system was employed to reduce and qualifier descriptors as well as dimensional standards were used to refine. Using the qualifiers to reduce may not necessarily require a matrix and coding systems. It is probably possible for a designer to use their internal judgment to compare their ideas to qualifier characteristics and make effective judgments to which ideas have potential. The reality was, the three picked were already the ones, amongst some others, found to be noteworthy designs before even comparing them in the matrix. However, using the matrix was still helpful. It helped justify the already favored ideas.

A third challenge to using the serendipitous method is the inescapability. No designer can claim to create in ex nihilo (out of nothing). As mentioned above, the creative process is influenced by the experiences and "intent" of the designer. In this case, intent means expectation of function and/or form before the act of designing begins. Because the investigation began with a purpose, to design generic and functional objects, the desire to add function and create beautiful form was predisposed to influence the generative process. This was prevalent at the beginning of phase b. At first, the ideas appeared functionally contrived and over-thought. In an attempt to over-ride this condition, the following set of drawings was produced with the blind drawing method. This method did work. However, even though the drawings were done with eyes closed, once the eyes are opened, predisposition of the designer still influenced the interpretation

of those drawings. There are two ways to view this; attempt to reject internal "intent", which is hermeneutically not possible, or accept and embrace the reality that one cannot escape one's self. The idea of "intent" goes alongside the idea of designer's hand mentioned earlier in Chapter II. A designer cannot escape the inherent way they do things, such as drawing quality, just as they cannot escape what forms move them emotionally and what functions they see possible in a form. At first glance, the inescapability of "intent" seems harmful to the serendipitous method, but looking deeper into the matter reveals that the very "intent" of the designer enables their ability to regulate the design process. "Intent" enables them to know when to reject or privilege an idea, guiding them to a desirable outcome. To an experienced designer, "intent" becomes part of their creative instinct. The serendipitous approach requires a temporary suspension of intuition while relying on instinct to make judgments.

The Role of Furniture Prototypes

While deciding the material and finish for the final prototype, the question arose: what is the role of furniture prototypes in the design process? Seemingly, furniture prototypes perform two roles: create a conceptual statement and represent a manufacturable reality. When asking the question, what material would be best for making a presentation and what material would be best for production, two different answers arose. Shifting to a question of priority: prioritizing of the visual statement, or prioritizing ensuing mass-production. The issue arose because of the concern to make a prototype appear as one piece or expose the joints and fasteners; celebrating the assembly process. The one piece would give the form a clean lined appeal and enhance the planer characteristics of the form. Exposing the joints and fasteners would take away from the clean appeal, but would represent more accurately a mass-produced piece. It was decided to prioritize aesthetics over manufacturing process because of the importance of emphasizing the impact of the serendipitous design process. Furthermore, the modifications necessary to make the

prototype ready for mass production would not compromise the form or negate the theory of despecialization.

Over-Consumption and the Despecialization of Objects

This investigation has dealt with the problem (over-consumption), in a theoretical manner (despecialization of objects); proposing a possible way to apply the theory–serendipitous generative method. What is the answer to the main question? Is despecialization the solution to over-consumption. The answer is inconclusive. The investigation has provided a method for accomplishing despecialization based on the premise that despecialization is the solution to over-consumption, but it is not possible, from this research, to determine if despecialized objects can influence object consumption. Further testing is required. The method presented and implemented does produce a despecialized outcome. Whether can an orthodox process generate despecialized objects, there is no way to tell. The orthodox process, at its best, has been producing very specialized objects for some time.

To recap, the following was revealed during this thesis. (a) A designer cannot escape intent. (b) Despecialization is achievable. (c) The serendipitous generative approach provides an effective method to achieve the despecialization of objects. (d) Suspending functional and formal "intent" enhances the ability to achieve despecialization. (e) Moreover, prototypes play dual roles in furniture design.

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APPENDIX A

PROCESS NOTES

6.15.2006: When do you stop and move to qualifiers? Answer: using past experiences to; when I feel I have developed noteworthy forms.

6.19.2006: Random generation doesn't seem to work well. With not focus, it is challenging to produce volumes of forms. Today I will try two different methods: 1. Use the fundamental forms from the qualifiers as a palate to begin with. I will do this by drawings. 2. I will make sketch models of fundamental shapes and assemble them in different configurations and take pictures.

Filter with fenestrations
Protrusions
Cavities
Enclosures
Dividers
Cutouts
Flat horizontal planes
Body configurations

Small drawings allow for quicker, more responsive production.

6.20.2006: I have switched to drawing small sketches. In this way I am able to produce more ideas in a quicker manner and I am less controlled by.

Challenging the intent:

We take for granite the generative process; it's not automatic. Where does the initial formal process. Using intuition in the back of my mind. Can't escape my own filter. Later recognizing its value. It's not arbitrary.

Intuition changes as you gain experience.

Challenges the current notion of intent.

7.11.2006: Until today I have moved slowly. Until today I have only been producing small sketches as before. I have produced approx. 127 sketches. I now plan to move forward by marking the sketches/ideas that interest me most or present potential. In my first attempt I have identified 20. Next I plan to expand on those ideas producing varieties based off each marked sketch.

8.23.2006: What is the question I am asking about the "furniture"?

Most functional versatility?

What qualifier is it best suited for?

Does it associate to known objects?

Does it communicate a particular orientation for operation?

Does it use "a lot" material (relative)?

Potential to work well with typical furniture?

Approachable?

Communicates its function? The more association, the quicker or better it will communicate.

8.24.2006:

What makes an object despecialized?

How do we determine if an object is despecialized?

What features are characteristics of a despecialized object?

No direct association to known furniture type

Rotating

Alignment with qualifier

My opinion

Potential for functions – Qualifiers helps determine that

Physical characteristics:

Scale to Human

Proportions

Rotating

Must have two things to be despecialized:

Minimal association

Functional versatility: qualifiers & rotating

Goals/Potential Function <———> Object A <———> Physical Characteristics/Despecialized

8.25.2006: No complete removal of function or formal "intention" on the minimization of them over the primary objective of serendipitous. I say this because I noticed that objects resemble office furniture types. No table, beds, or sofas.

9.19.2006:

Curve (JPT.13)

I have detached the rear leg so that it becomes simpler and removes the dead space.

The challenge is to have the unit standup and sit on its side.

I tried changing the shape to more fundamental–this has potential.

Do I shelves or not?

Geo Interruption (JPT.21)

Put most work into because has the potential for a dynamic piece.

Have not decided on a particular curve form

Still like my original the most!

The challenge is to have it repositional within the geometric base.

Do I make a more geometric form or more amorphous?

3 Axis Extrusions (JPT.36)

I have ignored other options

Smaller identical components combined together

Forgot about all other 3 axis ideas–combine others together.

Needs more development.

9.7.2006: Today I began to explore alternative to the JPT21 form. I discovered I could use it in many different positions. I also considered having the "seating" form separate and I played with ways to orientate it and "prop" it up. One way was to have it float on a pivoting base.

APPENDIX B

ESSAY ON PERSONAL CONSUMPTION

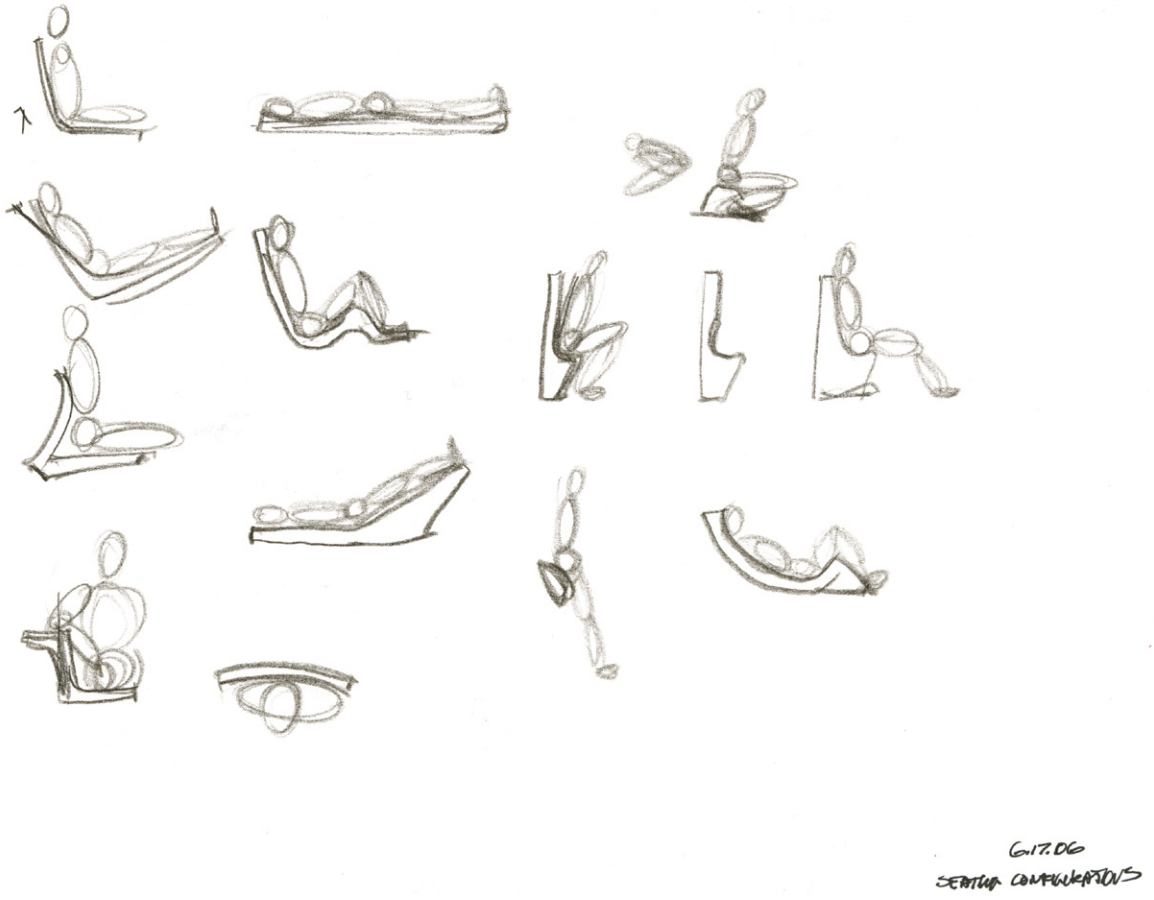
2.17.2006 My Relationships with Objects

We consume too much. We don't really need as much as media and marketing schemes tell us we need. "The more I see, the more I want." "The less I see, the less I want." When I go backpacking, canoeing, or anything outdoors, the distinction between what I really need and what I just want becomes clearer. I don't need an IPOD. I just want one. Maybe it fills an emotional need that nothing else can fill. Music definitely is a powerful agent of emotional healing, inspiration and such, but I don't think so. What about objects that I already own? Do they fulfill my needs or wants? Lets look at an obvious one, my car. I do not drive a new car by any means. I only paid one hundred and fifty dollars for it. And the only reason it continues to run is because I maintain it myself, with some of my dad's guidance. (My knowledge and skills allow me to keep a car that otherwise would have to be junked.) Well, do I need a new car? No, not really. This one runs well and it is reliable for the most part. It does its function quite well. The bigger question is do I need a car at all? Or should I even ask the question whether I need it or not? Why does it matter to even question the "situation"? Well I need to get to school. I could walk, bike, use public transportation or even ask a friend. All these options plus using my own car, involve resources. So if I decide that I need to "travel" to school because I need to "go" to school, then I will have to use some travel option and thus some resource. Walking uses time and my physical energy. Biking requires initial monetary overhead and my physical energy. Public transportation requires time, following a set schedule and money. A ride from a friend requires a friend, their time, gas, money to pay back for gas, and working around their schedule. Lastly, using my car requires the least amount of time, gas, money for gas, time for maintenance, money

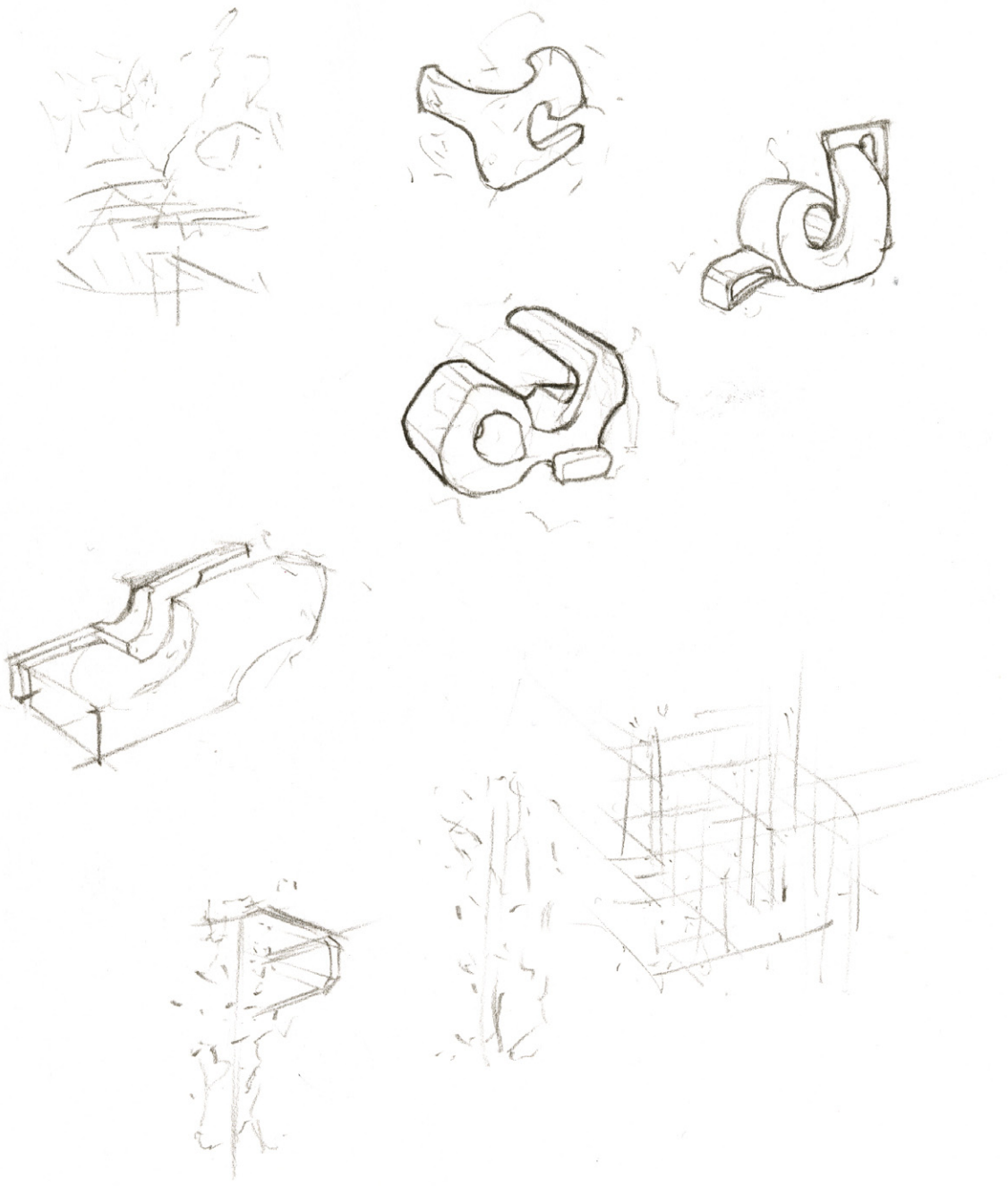
for parts. Since traveling to school is not a want, but a decided need, then choosing a travel option is based on weighing the cost between resources and benefits. So which one do I choose? My choice could be based off finances, comfort levels, time requirements, environmental impacts, etc. The choice becomes about priorities. My priorities could be a number of things and based off a number of subjective premises. Those premises could be from morals, ethics, past experiences, training from other people, emotions or physical conditions. Well, I can examine these for myself, but to recommend general actions off my self-reflection is questionable. With all this said, it seems we don't ask the questions about our "situations" till a problem arises that confronts that "situation". Public media tells us we should question are material livelihood on a minute-by-minute basis. I don't need a new car until the problem arises that it no longer functions or I can no longer afford it. Then I am faced with the question, do I need a new car, or something comparable? Do I need a new car at all? I have never seriously questioned it. On one hand, I don't need one to be happy, but I like having one. Also, since I was sixteen, I have had the privilege of have one and having the freedom to go where I want to and when I want to. That gives value to the car far beyond the functional components or its aesthetics. In fact, even though the car I own now is not very handsome, it means a lot to me. I have taken it on many outdoor adventures and put many hours fixing it. I have replaced axels, brakes, 2 alternators, one engine, a bumper and a power steering rack. I also have worked to get it to pass emissions twice and welded suspension ligaments because replacements could not be found. I will miss the car when it's finally gone. I am already planning on buying another old car when this one dies, so that I can fix it and be proud of it. So, the emotional attachment and the desire to make the car have long lasting use may have nothing to do with the car, even though it seems that way. It is more likely that my actions are based upon how I grew up and how I feel when I fix something myself, rather than relying on someone else or what advertisements are telling me to do.

APPENDIX C

ADDITIONAL SKETCHES



Fundamental forms that support the body.



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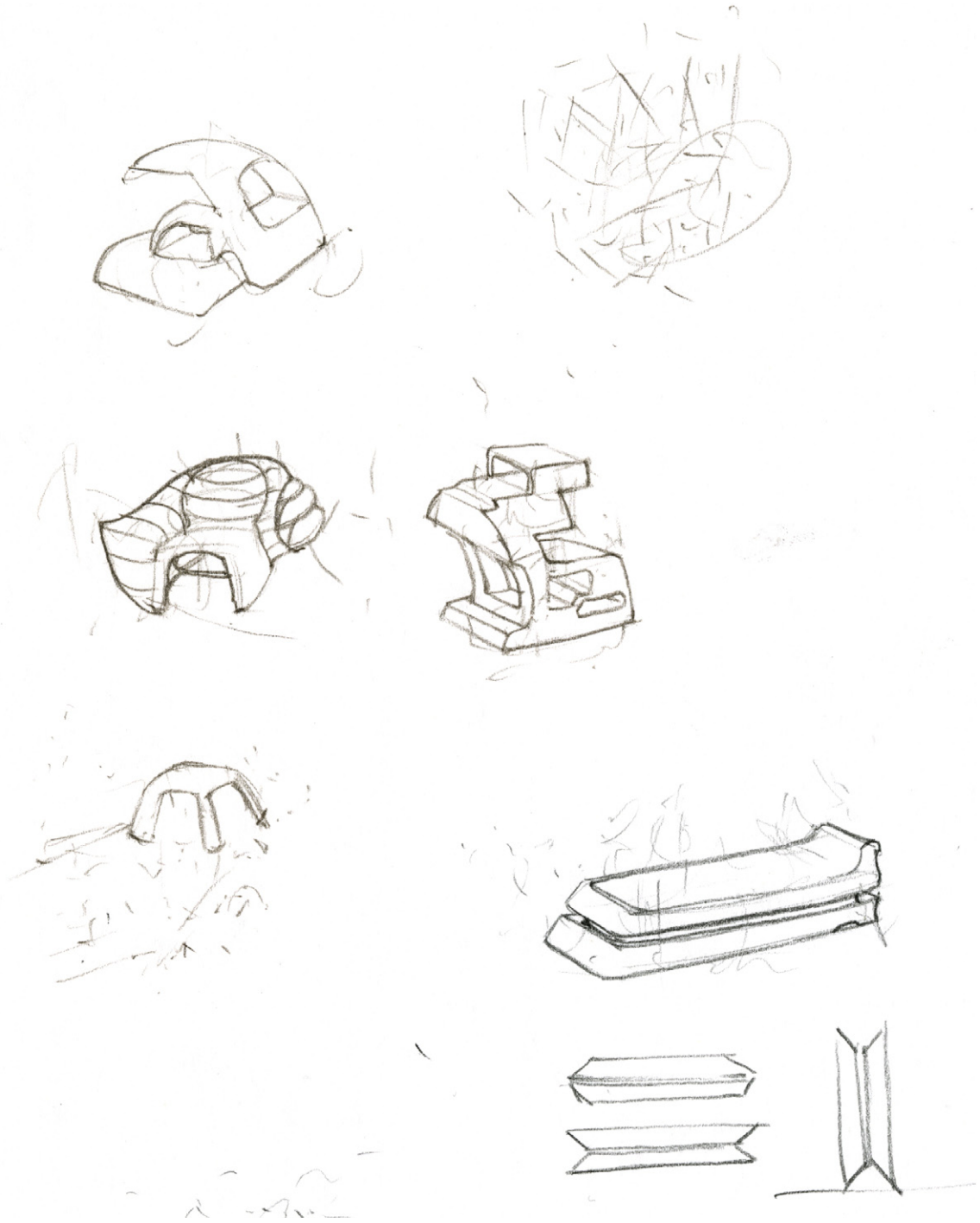

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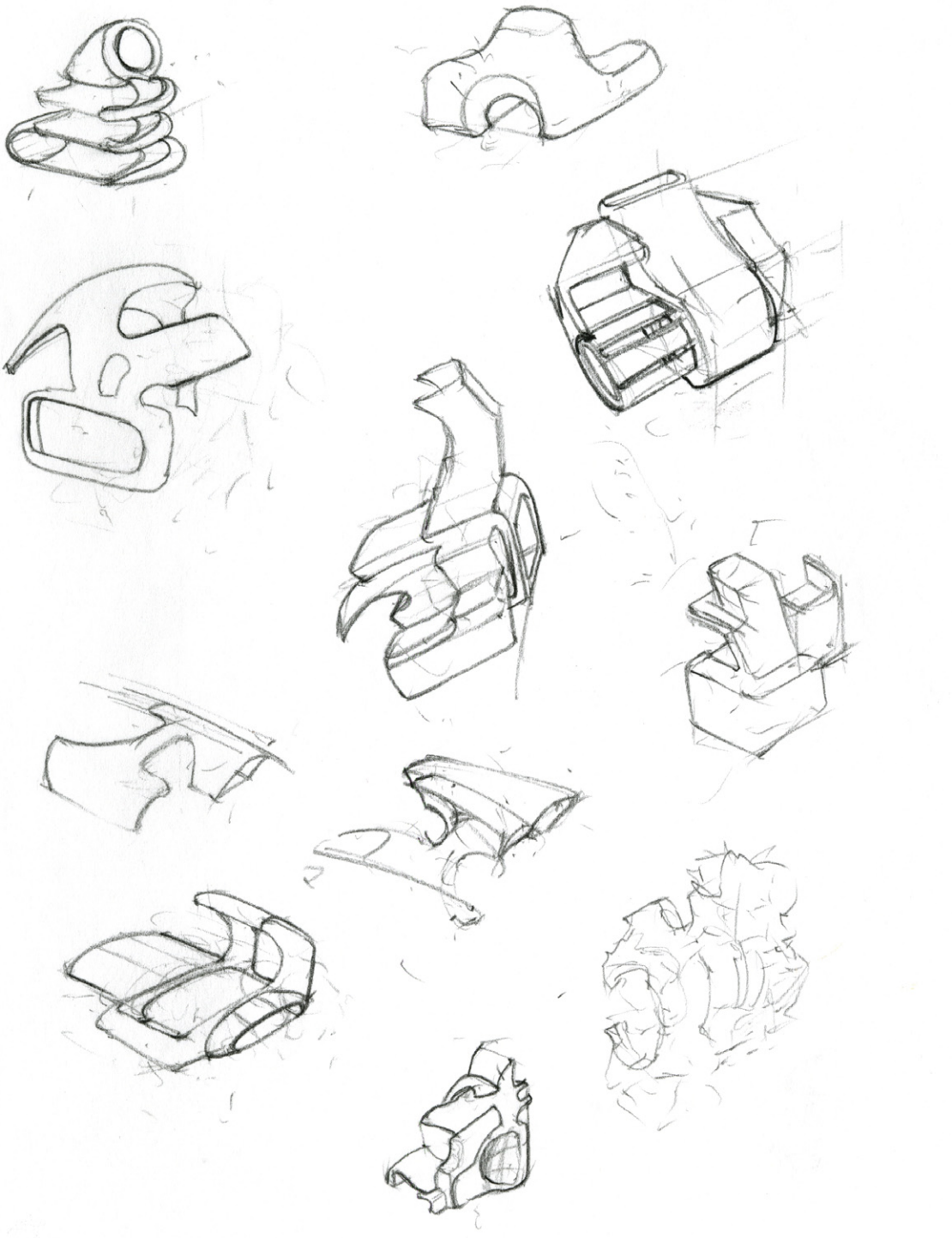

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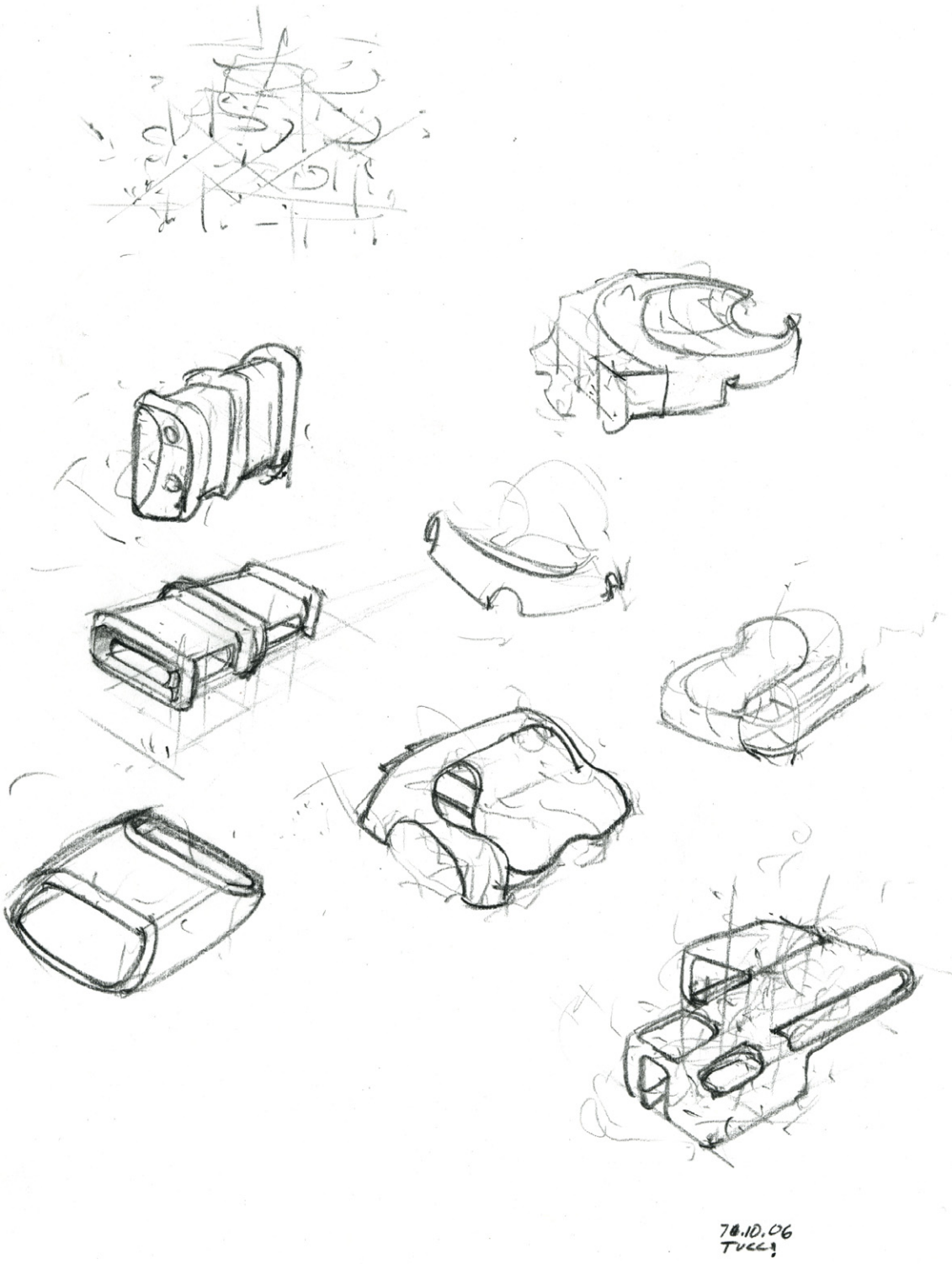

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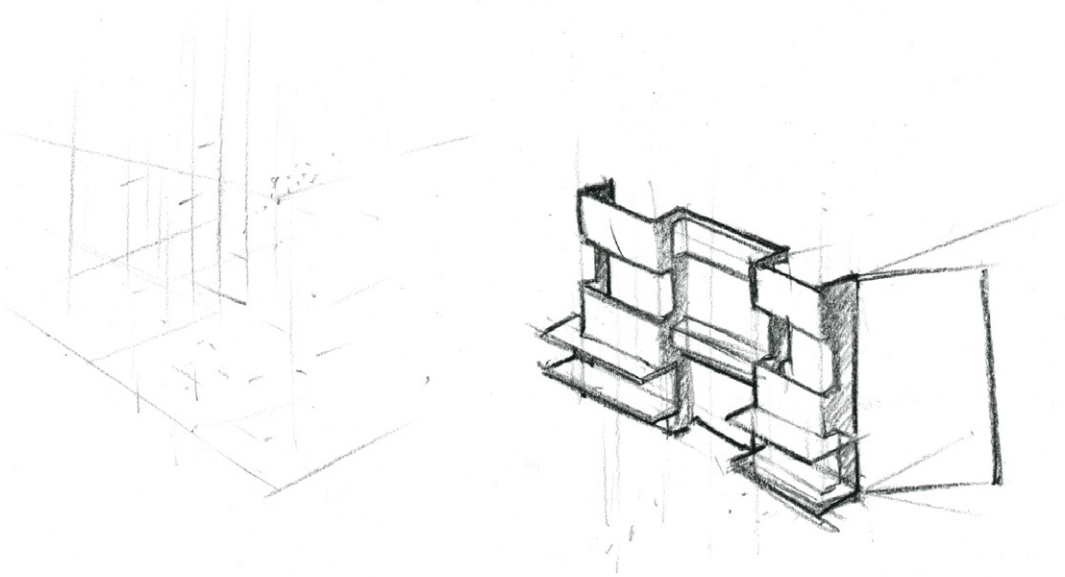

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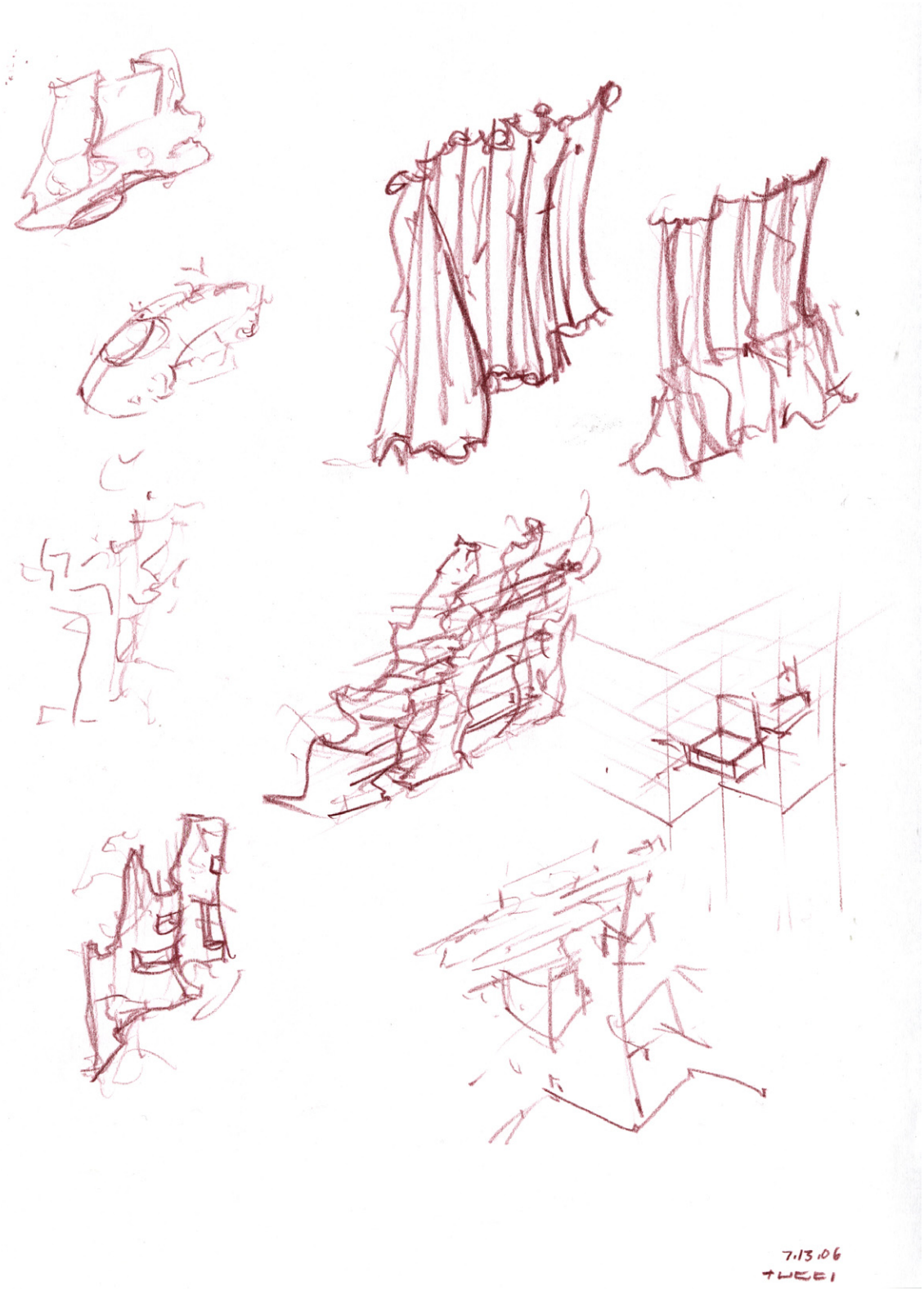

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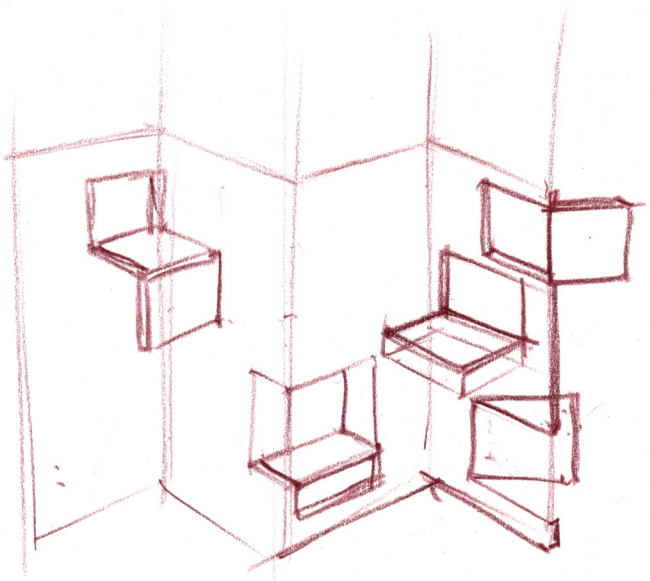

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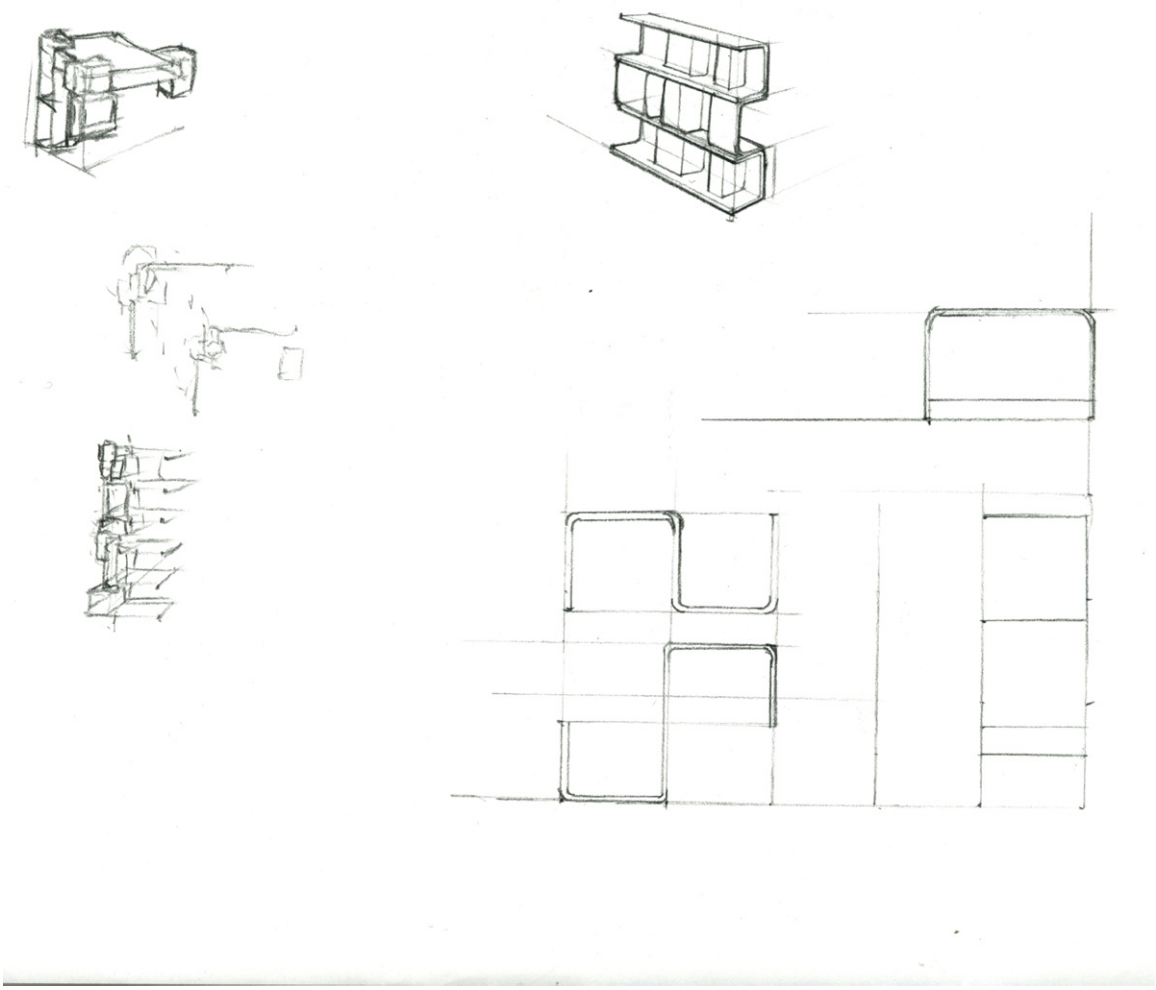

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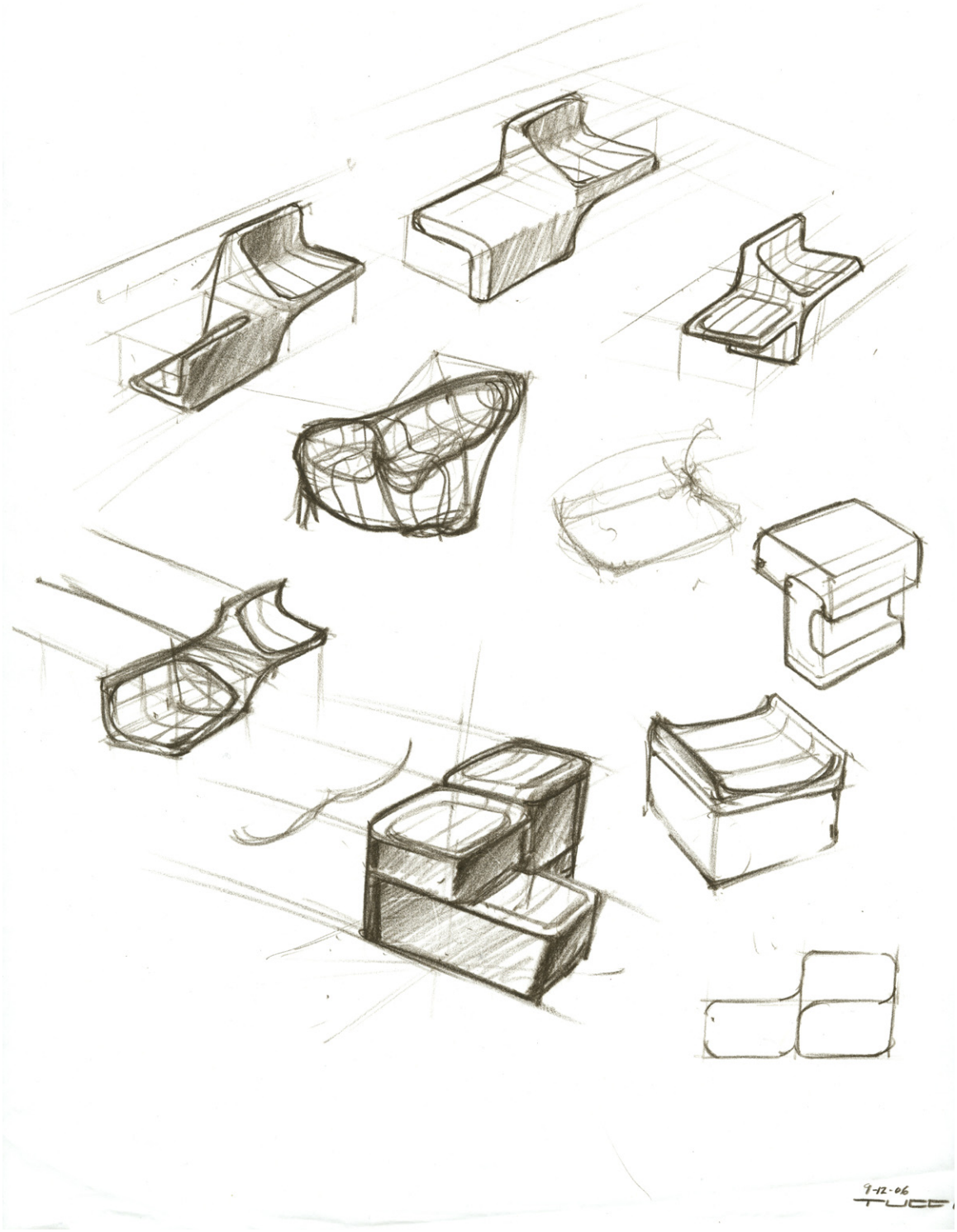
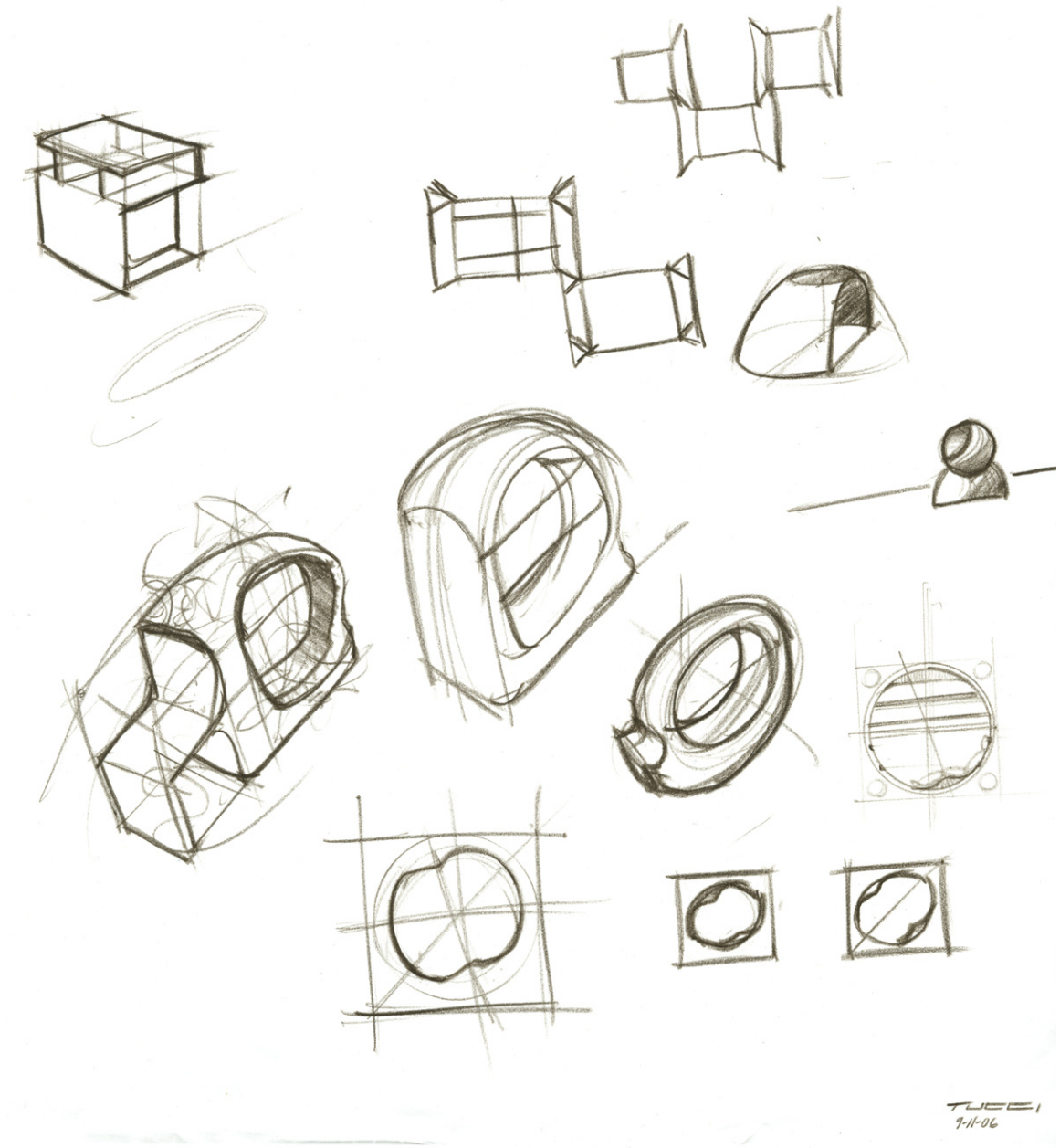


phase e

PHASE E



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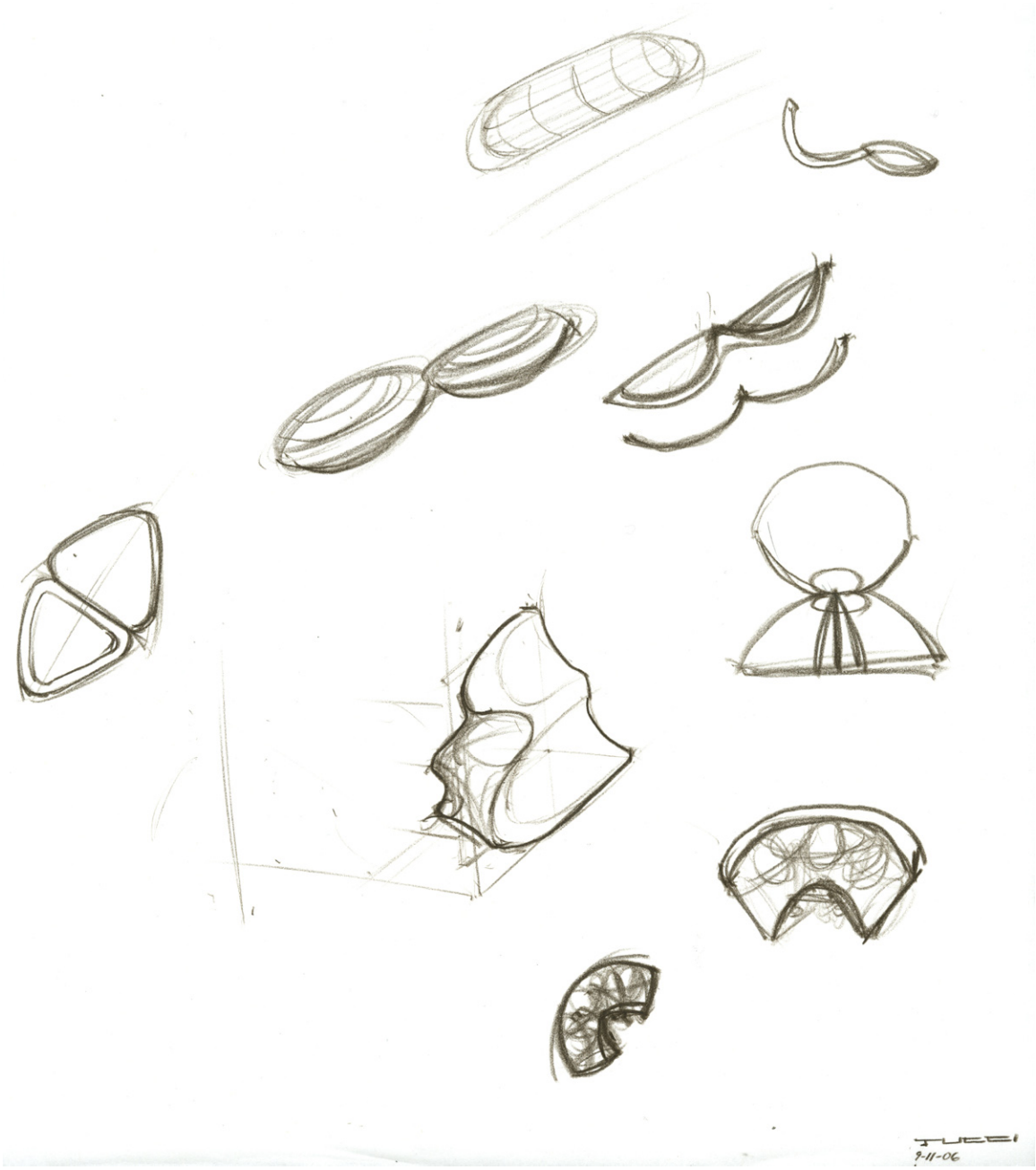

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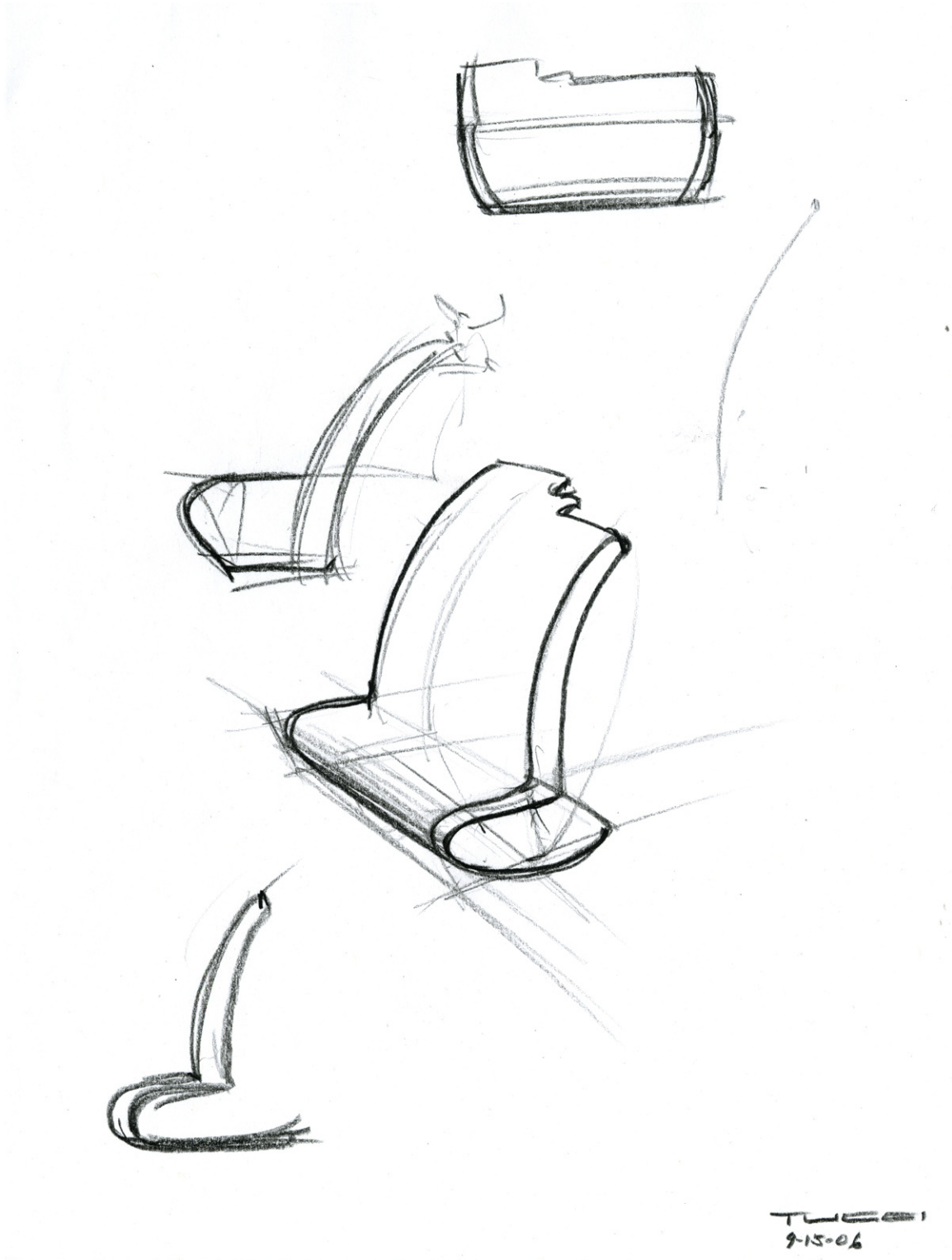

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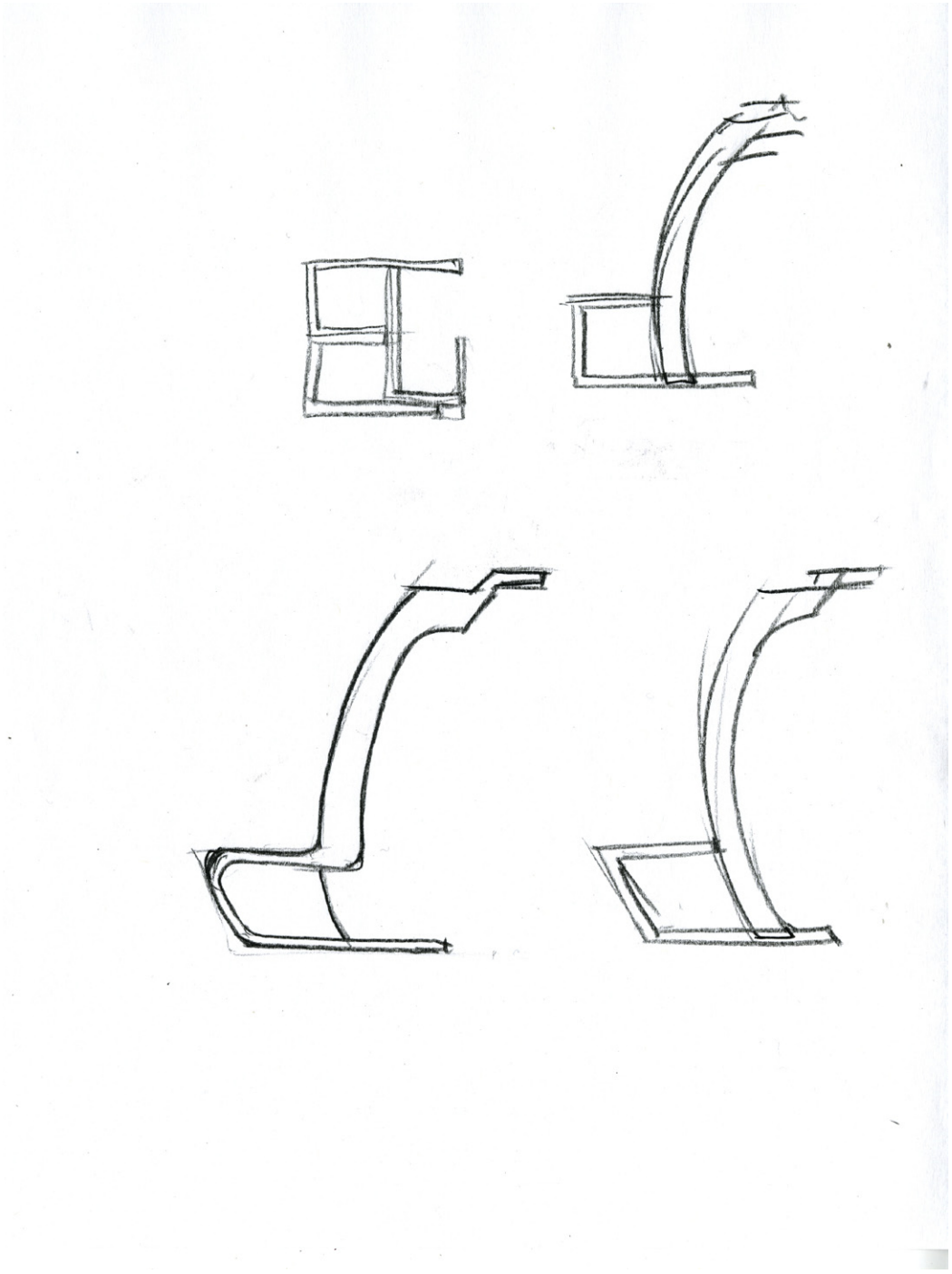

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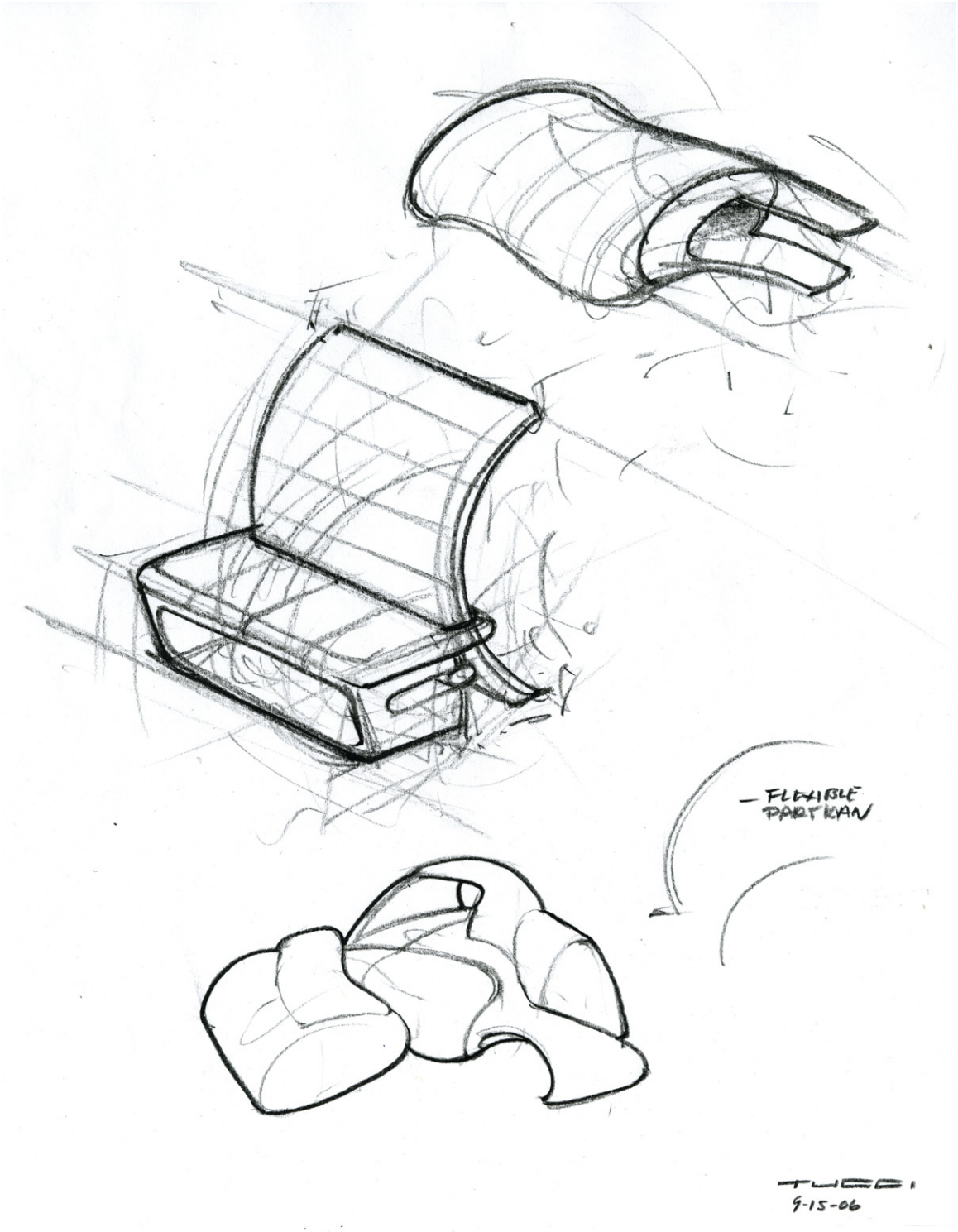

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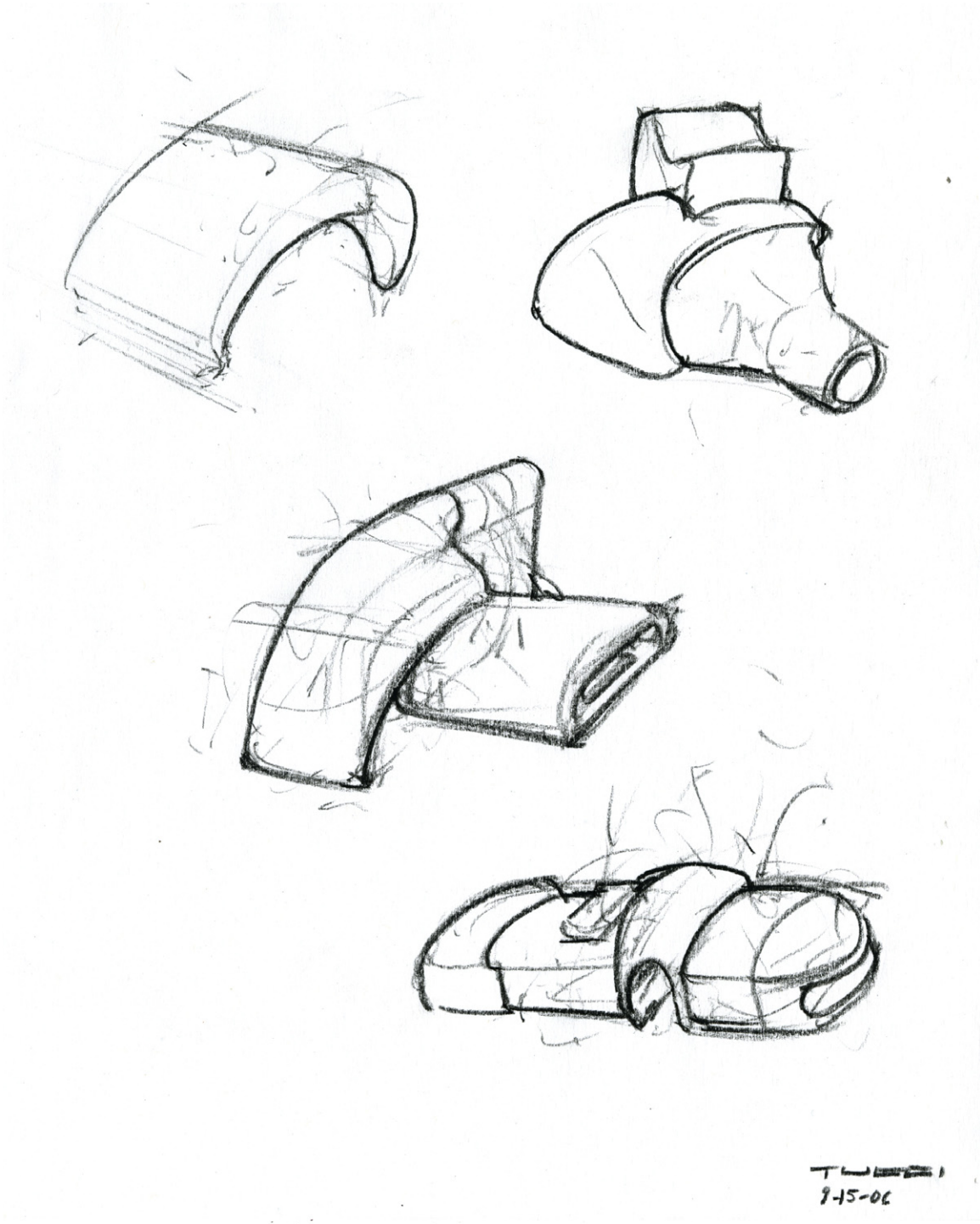

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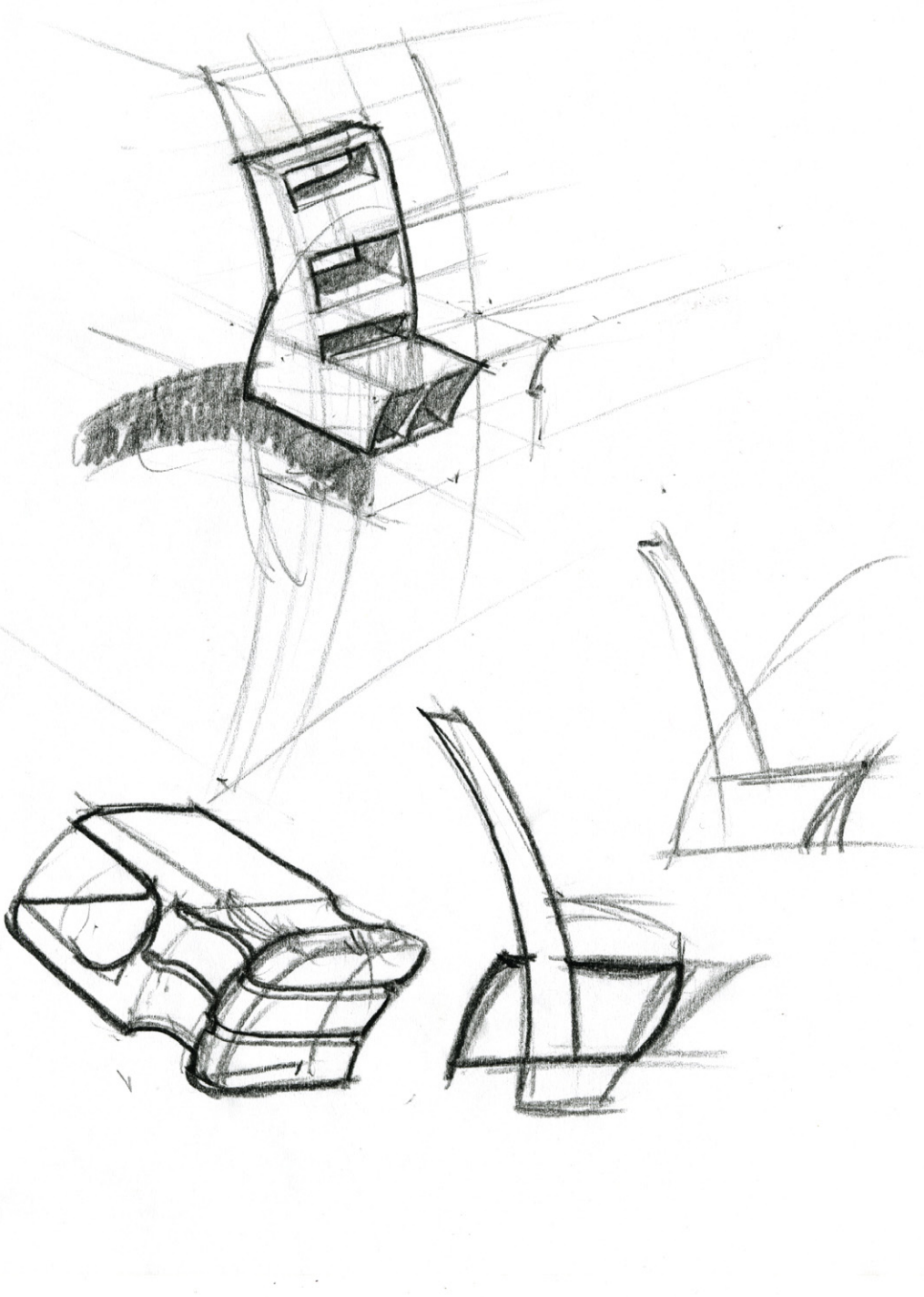
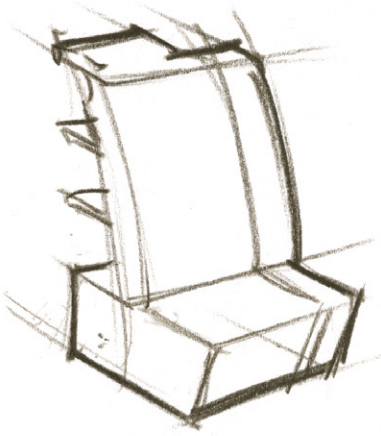
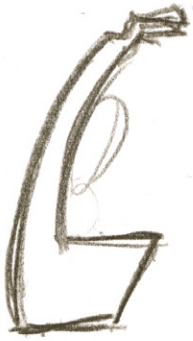


phase e

DO I HINGE THE LEG OR REMOVE IT.
↳ IF I HINGE, IT BECOMES MORE COMPLICATED
↳ IF I REMOVE IT, IT WILL NOT STAND UP





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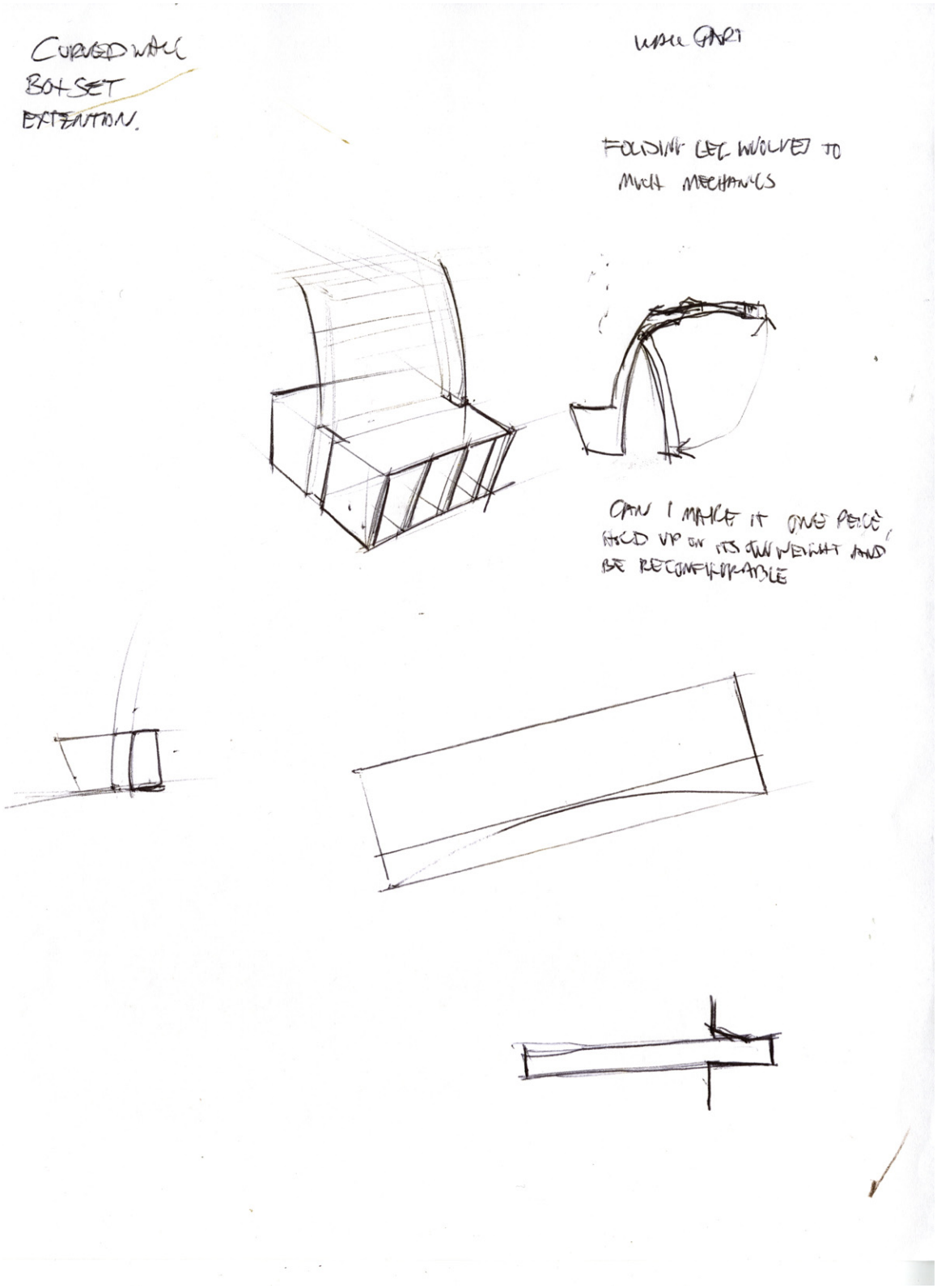
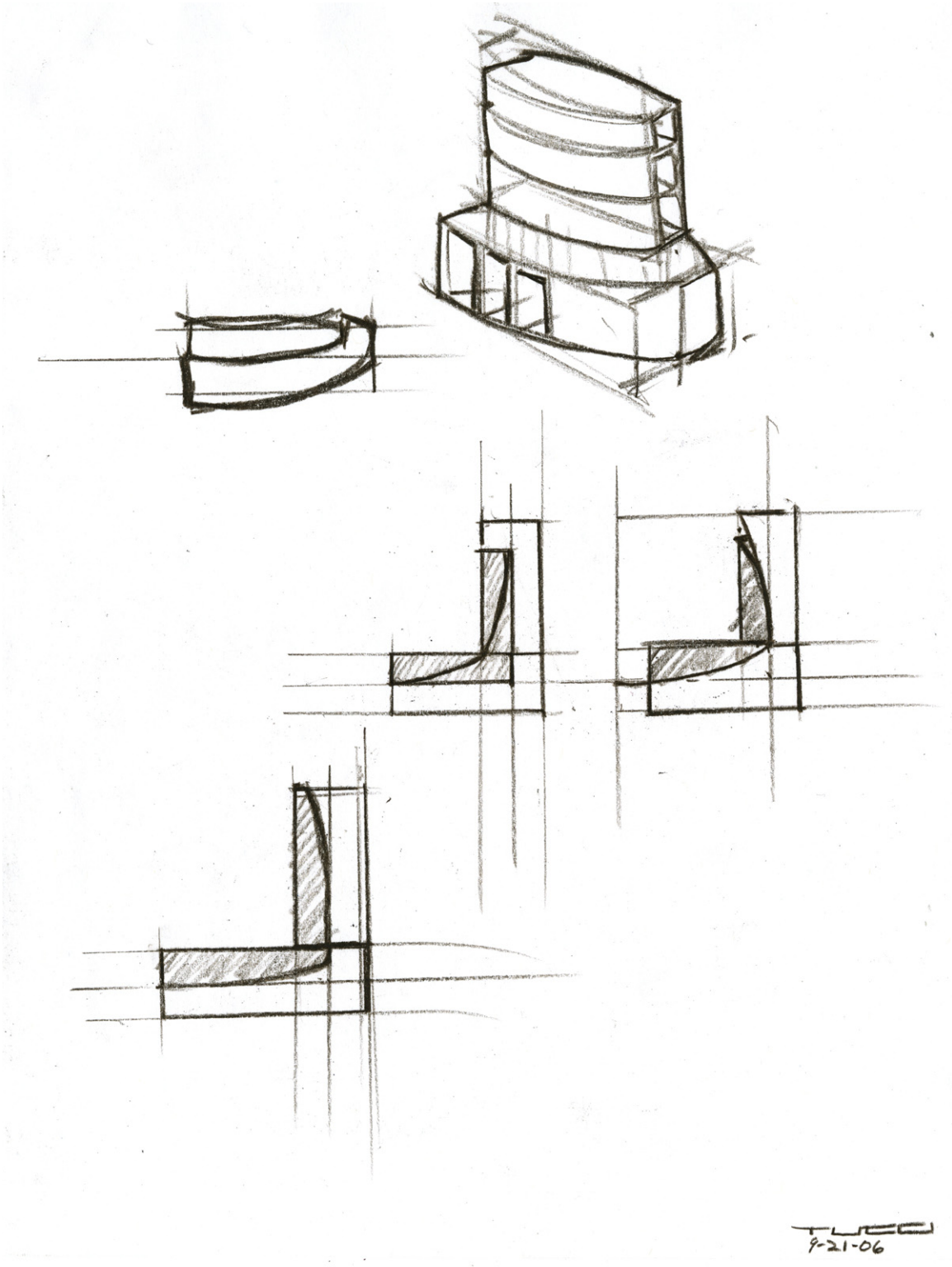

CURVED WALL
BOLSET
EXTENTION.
FOLDING LEG INVOLVED TO
MUCH MECHANICS
CAN I MAKE IT ONE PIECE,
HOLD UP ON ITS OWN WEIGHT AND
BE RETONFIGURABLE

phase e



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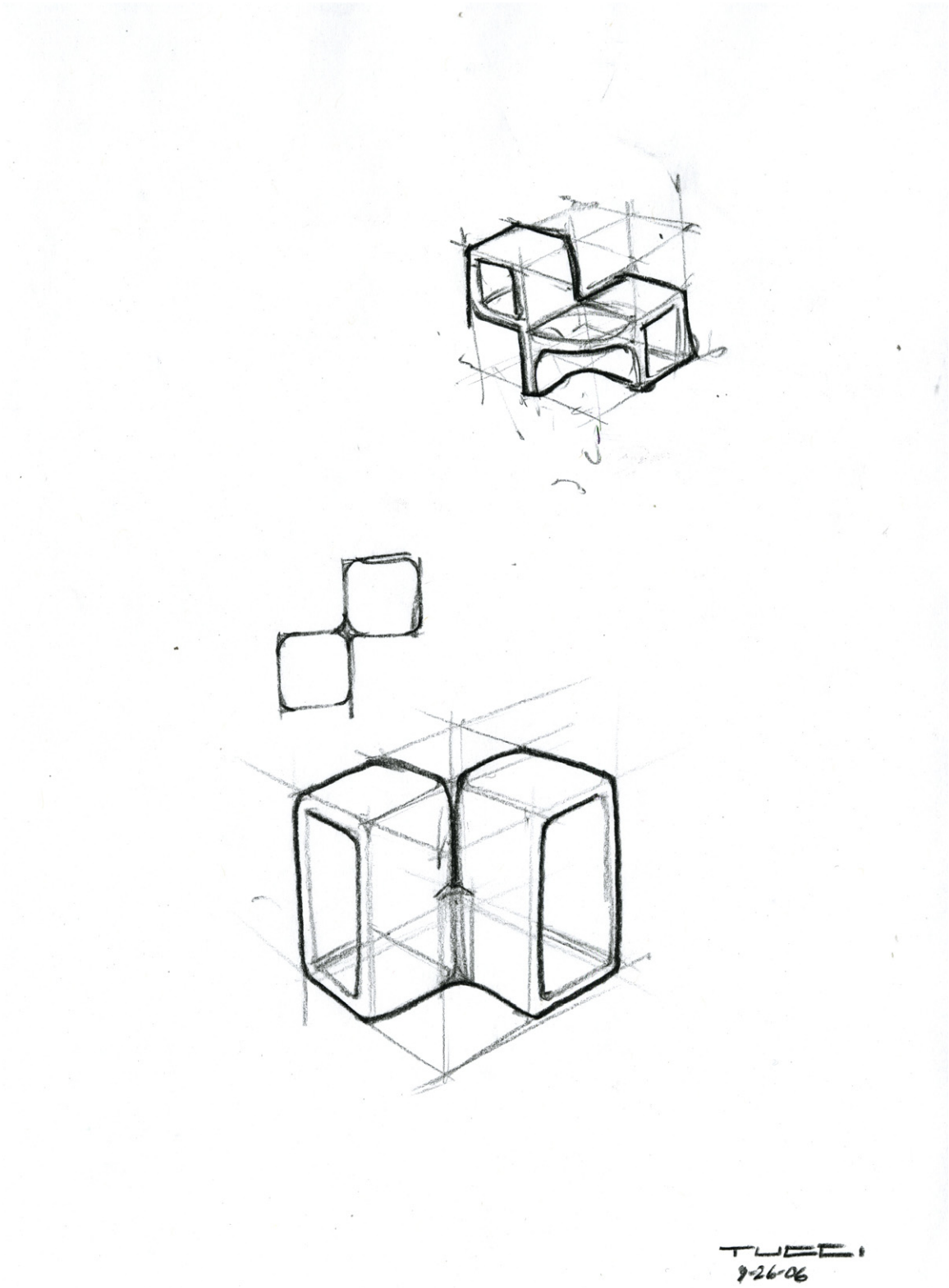

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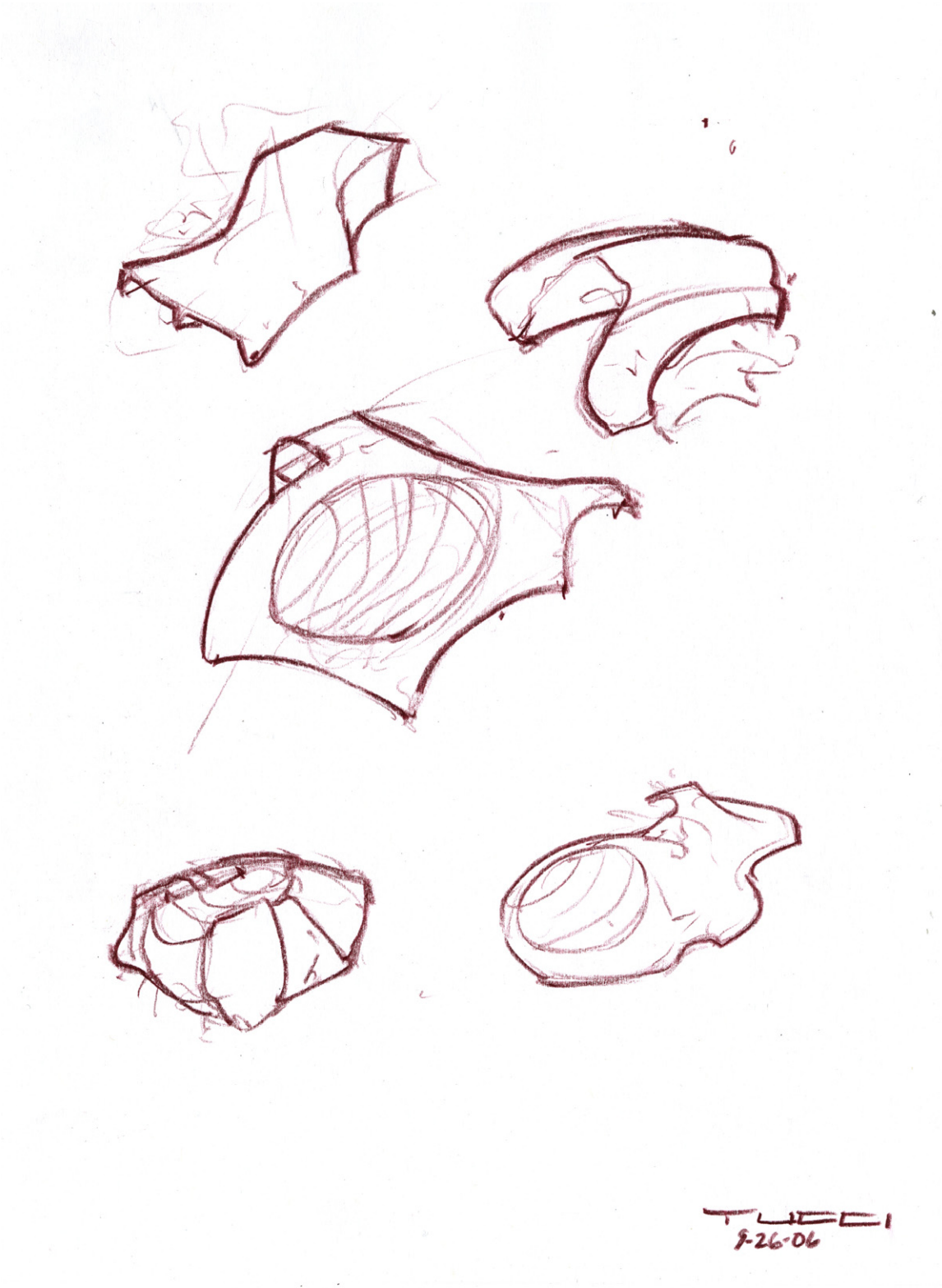

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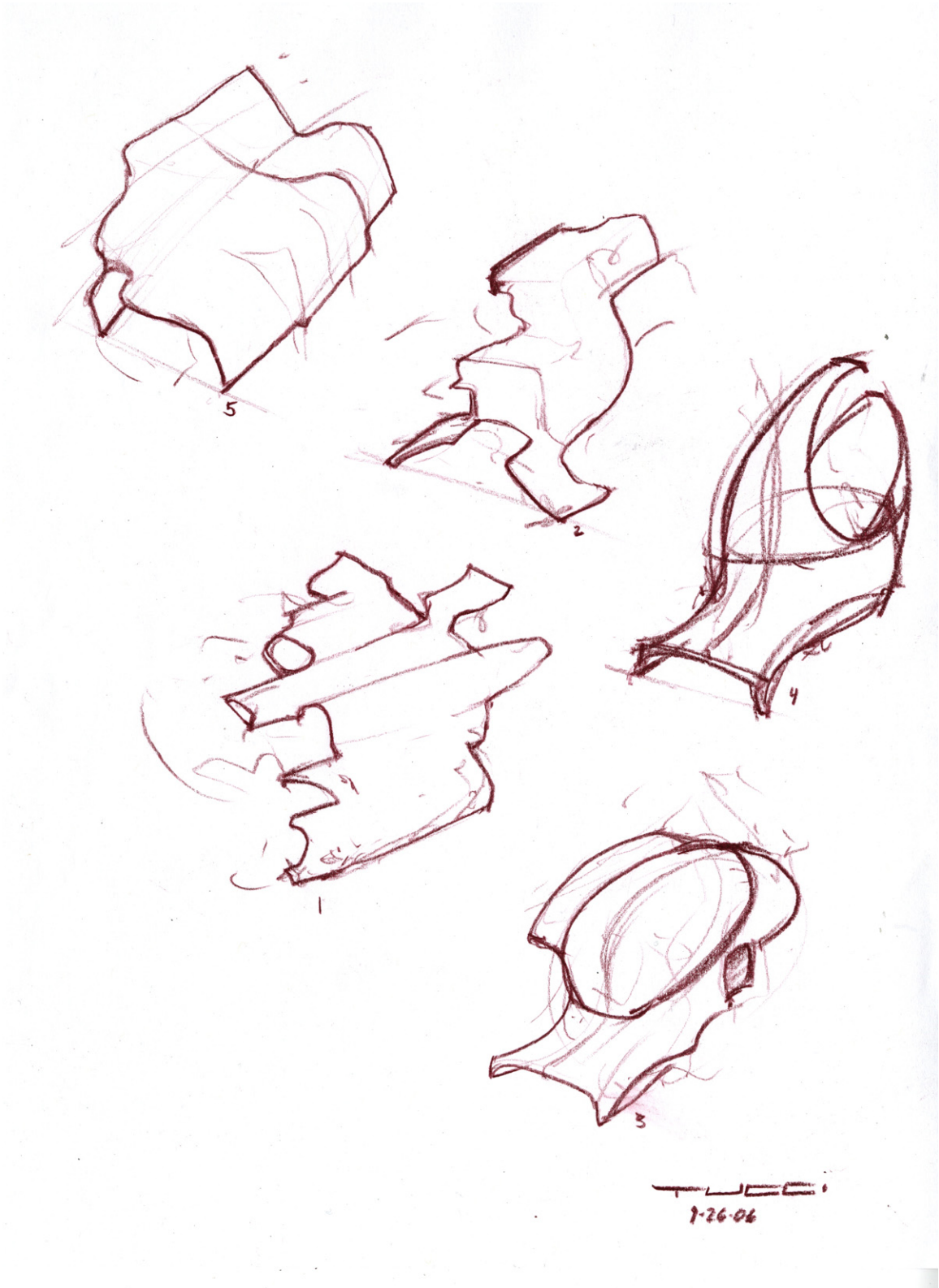

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